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The OIL WEEKLY

OIL and GAS ENGINEERING

FOR OIL AND GAS PRODUCTION AND PIPE LINE DIVISIONS

THE WEEK'S NEWS INTERPRETED

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EMBER 21, 1932
67 Number 10

OUR THANKS

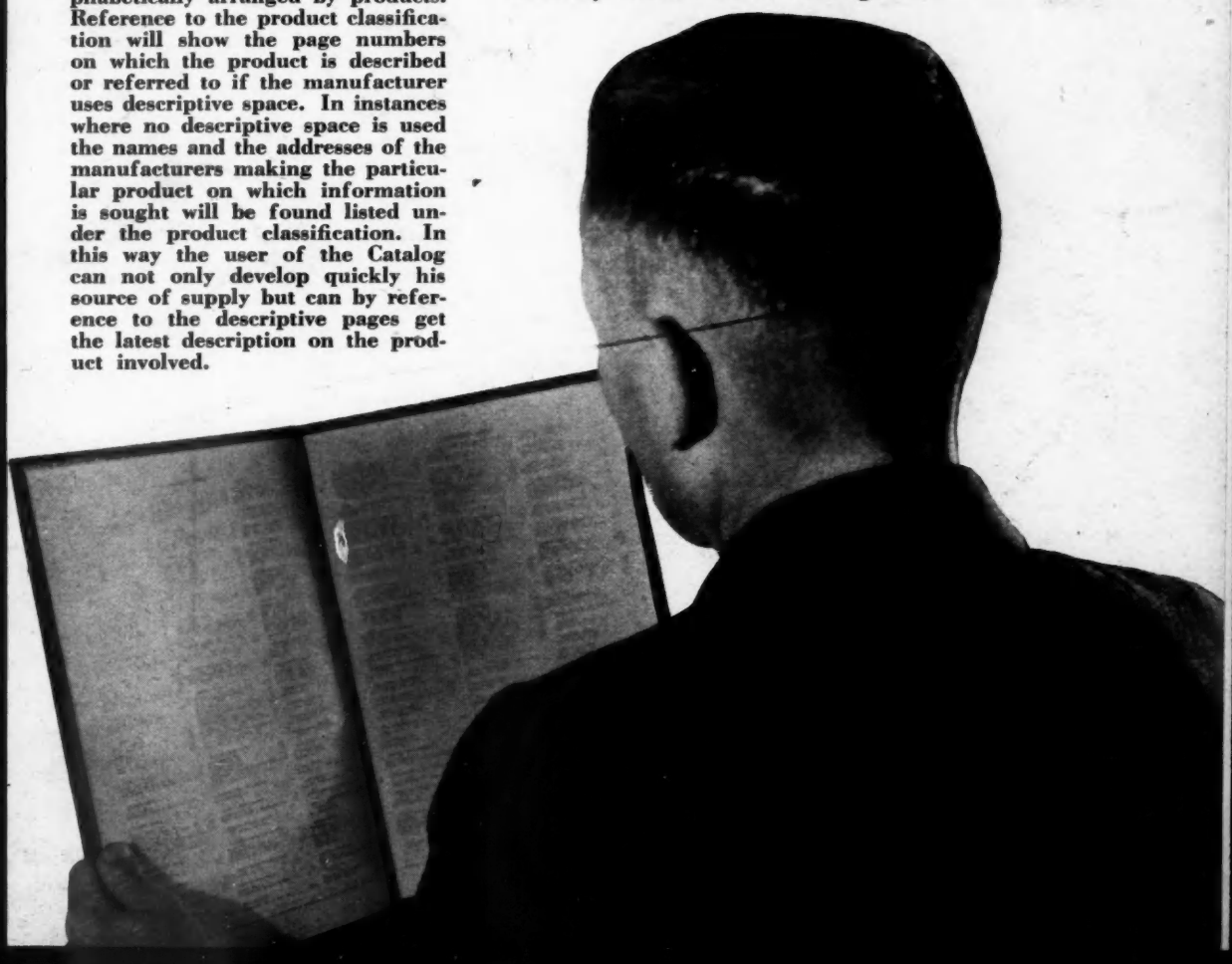
The Gulf Publishing Company wishes to express its appreciation to the oil companies of the world whose quick response with the names of their key men has made the distribution of the Composite Catalog a success again this year. Our thanks also are extended to the manufacturers whose participation in the Composite Catalog has made it larger and more complete than it was last year.

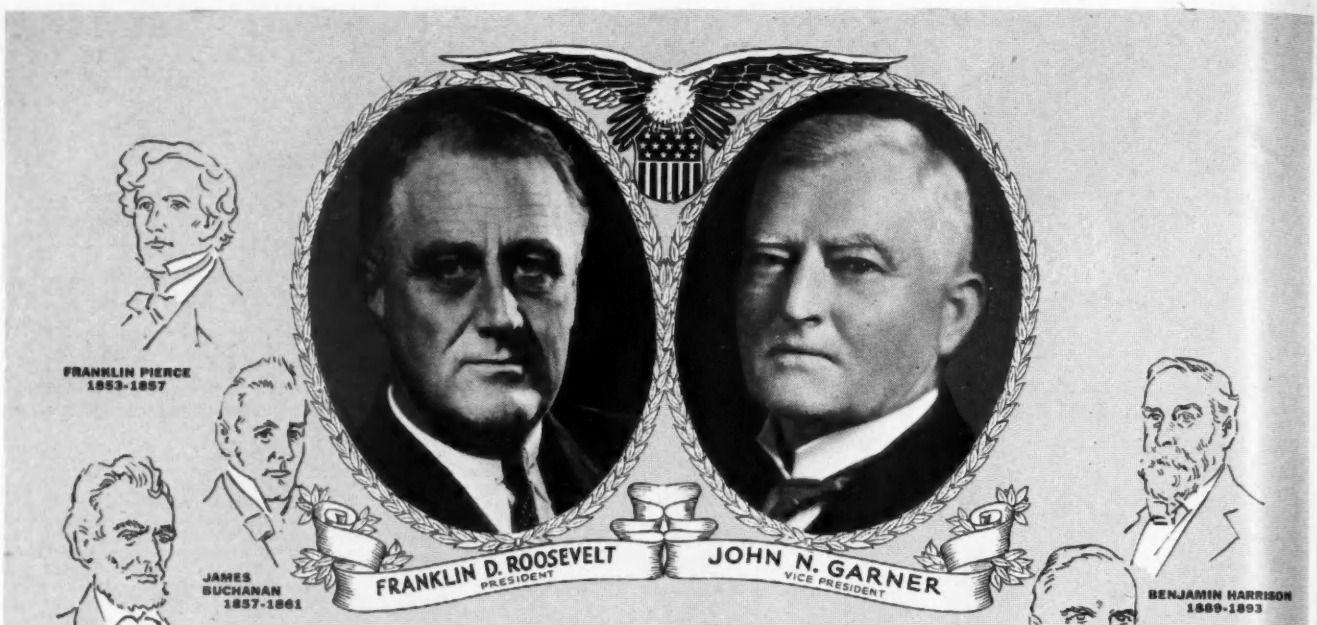
Using YOUR COMPOSITE CATALOG

By the time this is read, distribution on the 1932 Composite Catalog of Oil Field and Pipe Line Equipment will be under way. The edition this year is 25 per cent larger than it was last year. Several concerns are including their entire catalog in the Composite Catalog this year. Other manufacturers, using less space, are describing their new or standard equipment designed especially for oil country use. The classified index and directory section of the Composite Catalog contains literally thousands of listings.

How to Use Your COMPOSITE CATALOG

The publishers of the Composite Catalog have embodied every effort to make the use of the Composite Catalog a simple and time-saving matter. The classified section in front of the Catalog is alphabetically arranged by products. Reference to the product classification will show the page numbers on which the product is described or referred to if the manufacturer uses descriptive space. In instances where no descriptive space is used the names and the addresses of the manufacturers making the particular product on which information is sought will be found listed under the product classification. In this way the user of the Catalog can not only develop quickly his source of supply but can by reference to the descriptive pages get the latest description on the product involved.





FRANKLIN PIERCE
1853-1857

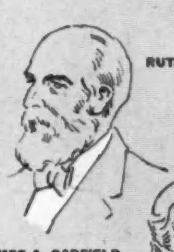
JAMES BUCHANAN
1857-1861

ABRAHAM LINCOLN
1861-1865

ANDREW JOHNSON
1865-1869

ULYSSES S. GRANT
1869-1877

RUTHERFORD B. HAYES
1877-1881


JAMES A. GARFIELD
1881—

CHESTER A. ARTHUR
1881-1885

GROVER CLEVELAND
1885-89—1893-97

BENJAMIN HARRISON
1889-1893

WILLIAM McKINLEY
1897-1901

THEODORE ROOSEVELT
1901-1909

WM. HOWARD TAFT
1909-1913

WOODROW WILSON
1913-1921

WARREN G. HARDING
1921-1923

CALVIN COOLIDGE
1923-1929

HERBERT HOOVER
1929-1932

From Franklin Pierce to Franklin Roosevelt

In the year that Franklin Pierce, with a popular vote of 1,601,474, defeated the Whig candidate Scott, for President, the JARECKI Manufacturing Co. came into being. ● The company has continued to serve industry through the administration of seventeen Presidents . . . through three major wars . . . through the upswings and downswings of dozens of business cycles. And all the experience it has gathered, all the progress it has made, is reflected in the products which today bear the JARECKI trademark. ● While age may not of itself be important, continued progress over a span of 80 years does indicate *sound business policies.* The keystone of JARECKI'S policy is an extra measure of service to the customer—extra safety, extra strength and extra value. ● An 80-year record of service and integrity is your protection when you specify JARECKI Valves, Fittings and other oil field products. It is the strongest possible guarantee of *economical service.*

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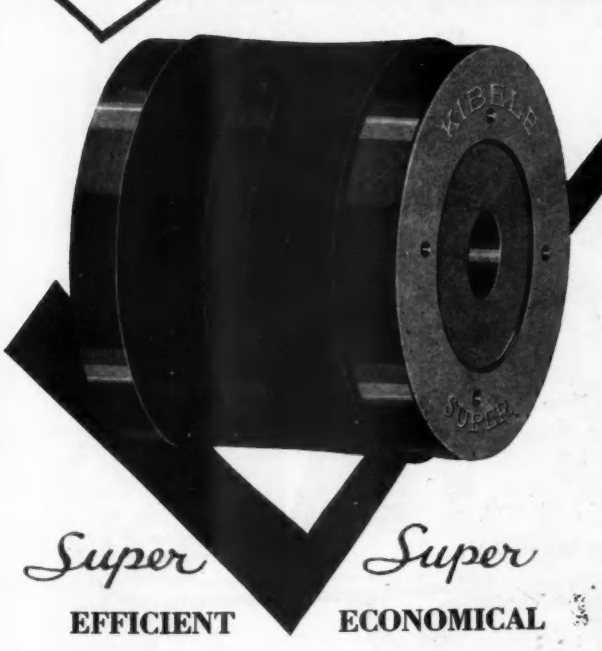

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MANUFACTURING COMPANY
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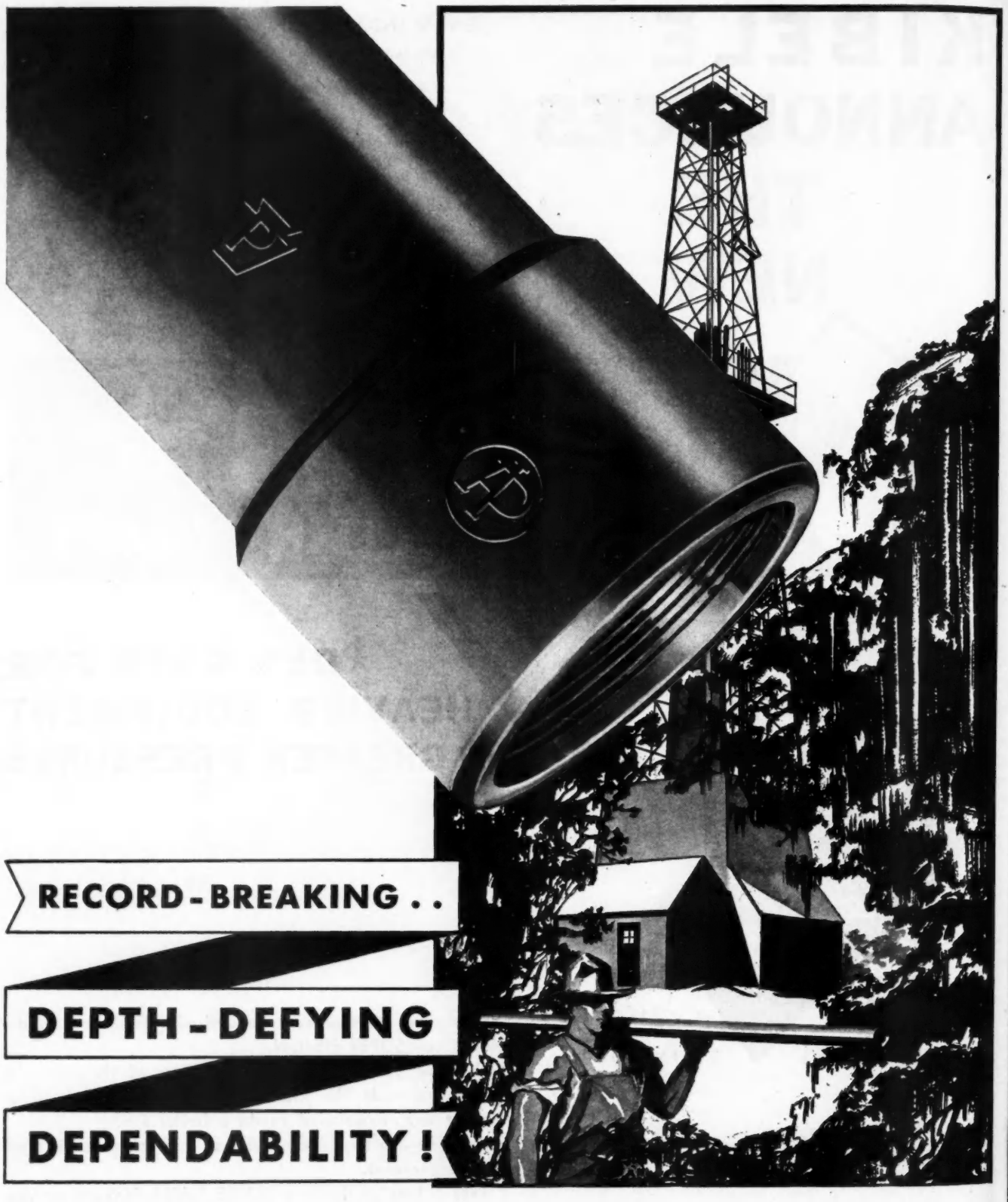

RECORD-BREAKING . .

DEPTH-DEFYING

DEPENDABILITY!

Pittsburgh Seamless

DRILL PIPE • CASING OIL WELL TUBING

PITTSBURGH STEEL COMPANY

Seamless Tube Division • Pittsburgh, Pennsylvania

New York Chicago Detroit St. Louis Tulsa Houston

THE OIL WEEKLY

November 21, 1932
Vol. 67, No. 10

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S. W. ROBINSON
Editor

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VOLUME 67, No. 10 NOVEMBER 21, 1932

THE OIL WEEKLY

FOR OIL AND GAS PRODUCTION AND
PIPE LINE DIVISIONS

ENGINEERING • NEWS • STATISTICS

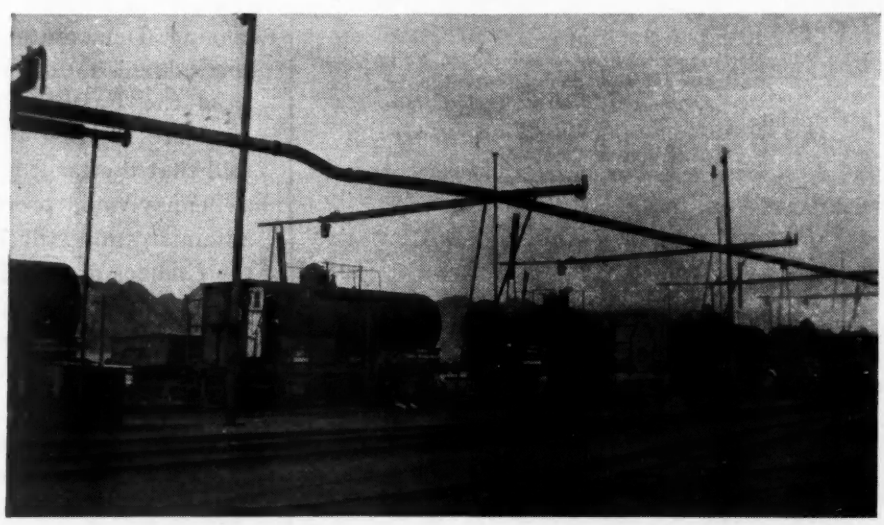
The Changing Panorama

An industry that is struggling to keep a bad situation from growing worse gets small comfort for the report of the economics committees of the federal board and of the institute. They disagree slightly on percentage of loss in gasoline consumption over the next six months, but they do agree that a period of low demand is ahead. It is to be hoped that calculations of the committees dealt with conditions as they are and took no notice of the possible improvement in general business which is possible, and in which the gasoline demand will of certainty have a full share. The estimates at all events set up a marker by which the industry may be guided in its production schedules, and a marker that will be valuable only as it is observed. If output of gasoline is held down and crude in proportion, any improvement in general conditions that would upset the forecast would be of multipled value to the oil industry. Page 11.

The report of the sub-committee on drilling practice shows that reduced coring time, improved practices, the use of thinner drilling mud and better knowledge of the formations encountered have resulted in a decrease of 60 per cent in drilling time and improved straightness of holes in the Oklahoma City field. Page 35.

Drilling Economies

Mounting costs of oil wells due to greater depths required have made economies in this quarter of interest in these times of stress. Factors to be considered in these costs include proper selection of casing and drill pipe, size of hole, bit selection, mud and weighting materials, cementing methods, straight hole practices, coring, formation testing, etc. To make some economies it is necessary to back track on improved drilling practices, a procedure that sometimes is advisable. Page 24.



Back of this loading rack and the railroad tank cars in which crude oil is moved out of the Wietz field, province of Hanover, Germany, appear heaps of sand, from which oil has been "squeezed out" by treating with hot water and steam. The oil sand is lifted bodily to the surface through two 750-foot shafts.

Reports to the American Petroleum Institute from refining companies controlling 93.4 per cent of the 3,856,300-barrel estimated daily potential refining capacity of the United States, indicate that 2,135,000 barrels of crude oil daily were run to the stills operated by those companies and that they had in storage at refineries at the end of the week, 31,016,000 barrels of gasoline and 134,302,000 barrels of gas and fuel oil. Gasoline at bulk terminals amounted to 11,198,000 barrels and 1,307,000 barrels were in water borne transit in or between districts. Page 21.

Depression Hits Research

Too much depression, coupled with lack of interest, or perhaps lack of realization of the benefits to be accrued will apparently cost the industry the existence of a well planned and (so far) well executed research program.

This condition throws research endeavor back into the laboratories of the individual company or to fellowships in various universities sustained by individual companies. In a measure, research work is thrown back to that state which it occupied six years ago, save for the fact that much has been added to the storehouse of knowledge through the achievements of workers maintained through the establishment of funds by Rockefeller, Universal Oil Products Company, and others.

However, if scattered, company financed efforts, governed or controlled by no central body and with no central clearing house, is the best that can be done—then perhaps some means can be found whereby costly duplication of effort can be reduced, if not eliminated.

More fundamental research is essential. Petroleum technology is about to compete in the chemical field. Just as chemical research resulted in a chemical industry largely built on coal derivatives, petroleum is certain to become a chemical industry. The chemical industries and the industry of oil are now overlapping. It is inevitable that this trend continue and gain impetus perhaps more rapidly than many realize. Acceleration in this needed and important field is highly desirable, and that desire will best be gratified through continued effort in the research laboratory.

The Oil Man's Calendar

DECEMBER

5-9 *American Society of Mechanical Engineers, New York, N. Y.*

6-8 *Nebraska Petroleum Marketers, Omaha, Nebraska.*

9 *Independent Petroleum Association of Texas, For Worth, Texas.*

? *Rocky Mountain Oil and Gas Association, Great Falls, Montana, Rainbow Hotel.*

JANUARY

9-10 *Northwestern Petroleum Association, North Dakota Division, Annual Convention, Fargo, North Dakota, Waldorf Hotel.*

12-13 *Northwest Petroleum Association, Minnesota Division, Annual Convention, St. Paul, Minnesota, Lowry Hotel.*

FEBRUARY

15-17 *Ohio Petroleum Marketers Association, Columbus, Ohio.*

MARCH

23-25 *American Association of Petroleum Geologists, Houston, Texas.*

APRIL

13-15 *Petroleum Industry Electrical Association, Tulsa, Oklahoma.*

17-23 *Oil Equipment & Engineering Exposition, Dallas, Texas.*

20-21 *National Petroleum Association, Cleveland, Ohio, Cleveland Hotel.*

Tapered Tubing

Tapered tubing perhaps is not so efficient as to deserve the enthusiasm with which some of its advocates have accepted it as a method of inducing flow from oil wells. At least this is intimated in a discussion of the question which concludes that part of the theory upon which superiority of the tapered string is open to attack. Page 30.

Tariff Won't Down

That the present oil tariff is doomed when the coming Democratic Congress convenes under the new administration, is the opinion of several oil men from the East attending the American Petroleum Institute meeting in Houston. "Back East, we are told that the tariff bill on oil will be rescinded," said a Pennsylvania producer. "We are told that the administration will favor rescinding the bill and that the chances greatly favor the abolition of the tariff." On the other hand it was pointed out that John Garner, vice president elect, lent his assistance to the oil tariff and that the now democratic states of California, Oklahoma, Texas, Kansas, Louisiana and Arkansas favored the tariff in house and senate when the bill was passed earlier this year. The Independent Association meantime will continue its work while government reports that it does not help much. Page 16.

Texas State-wide Hearing *to Be Held* Saturday November 26

AUSTIN, TEXAS, NOVEMBER 15.

FIRST action of the Texas Railroad Commission under the new market demand statute will consist of a state-wide hearing November 26, instead of a hearing restricted to East Texas, previously scheduled for November 25. The change in scope and dates was announced here today.

This hearing has been called for the purpose of bringing the whole production of Texas into line with the current demand for crude oil.

When the East Texas hearing was announced, members of the commission sent out instructions that all purchasers of crude oil would be heard in determining market demand. Since there was no further announcement in regard to this policy it is assumed that the state-wide meeting also will involve hearing the nominations of all purchasers.

Although members of the body say they do not intend to use the price as a factor in setting up present allowables, the call for the East Texas hearing included a request for prices as well as nominations of purchase. Evidently the price that buyers will pay will be a requirement for the state-wide hearing.

This information is demanded for purposes other than of determining market demand, since both Chairman C. V. Terrell and Commissioner Earnest O. Thompson have said that there is no necessity for determining price in determining the amount of oil that will be bought in the field.

Members of the commission have said that they will consider each bonafied offer of sale or purchase which is brought to their attention.

The law passed last Saturday becomes immediately effective, as it was passed by the necessary two thirds to make the emergency clause effective.

The new bill, which was passed as an amendment to Section 1 of Chapter 26 of the Acts of the Forty-Second Legislature, First Called Session, contains several important changes.

Paragraph (k) of Article 6014, is added, and reads as follows: (This section deals with the various definitions of waste):

"The production of crude petroleum oil in excess of transportation or market facilities or reasonable market demand. The commission is authorized to determine when such excess production exists or is imminent, and to ascertain the reasonable market demand.

"The commission is expressly authorized to consider any or all of the above definitions in making rules, regulations or orders to prevent waste of oil or gas."

It should be noted that although the words "economic waste" are not included in this section, neither is the commission specifically forbidden from considering it, should they so desire.

Section 2 prevents the commission from interfering with the production of any field until it is producing 10,000 barrels per day or more, except, as was done under the old law, for the prevention of "physical waste." It also prevents the commission from prorating the production of wells which are defined by statute as "marginal wells."

"Section 5. The commission shall have power, and it shall be its duty . . . to inquire into the production, storage, or transportation of crude petroleum oil, and of natural gas, and the market demand therefor, all in order to determine whether or not waste exists or is imminent. The commission shall have the right to require any party to make and file with the commission sworn statements as to facts within the knowledge or possession of such party pertaining to the production, storage or transportation of crude petroleum oil or natural gas, and to the market demands therefor, as often and for such periods as the commission may specify, and may require any well or wells under the control of any party, whenever and as often, and for such periods, as the commisison may specify, to be inspected or gauged and the books and records of any party to be examined."

It is generally conceded, however, that the portion of the act dealing with gas will afford no relief to producers of gas in the Texas Panhandle area whose wells have been shut in for the past two years, due to lack of market outlet, as the gas moving from the field through the pipe lines goes to northern markets, and as inter-state commerce it is beyond the control of the state.

Section 6 of the new law is designed to permit the commission to divide the market outlet among the various oil fields of the state.

"Section 6. In order to prevent unreasonable discrimination in favor of one common source of supply of crude petroleum oil as against another and upon written complaint and proof of such discrimination, the Railroad Commission of Texas is authorized to allocate or apportion the allowable producduction among the various common sources of supply of crude petroleum oil in the state; provided, however, that in allocating or ascertaining the reasonable market demand for the whole state the reasonable market demand of one common source of supply shall not be discriminated against in favor of any other common source of supply; and provided further that the Railroad Commission of Texas shall ascertain the reasonable market demand of each respective common source of supply as the basis for determining the allotments to be assigned each respective common source of supply, to the end that such discrimination may be prevented."

It is probable that the first application of this rule will be made in designing a new order for the East Texas field. It is impossible to reduce the allowable there below 40 barrels per well under the terms of the marginal well law, and it is expected that a part of the allowable from other fields, particularly West Texas and the Gulf Coast area, will be turned to East Texas. There are more than 8500 producing wells in the field, which means a daily allowable of at least 340,000 barrels.

Section 6A makes it mandatory for the commission to consider the retail price of gasoline in determining the market demand for crude. It was designed to protect the consumer, or to kill the effectiveness of the bill.

HOLD PANHANDLE HEARING DECEMBER 12

Austin, Texas. — The Texas Railroad Commission has set a hearing at Pampa, December 12, to take up gas problems which have been hanging fire there for some time and make efforts to install conservation orders under the new law. It is expected that there will be a general tightening up on present orders on both oil and gas orders. All Panhandle gas questions will be considered.

Judge Ames Chosen *to Lead Institute As* President

Houston.—C. B. Ames was elected president of the American Petroleum Institute, to succeed Amos L. Beaty, who was the first man to hold the position as a salaried official. Directors made the selection November 17, the second day of the annual session in Houston.

Despite the many other questions and issues within the Institute, the presidency became the matter of chief interest before the annual session was well into its first day. There were indications that the presidency would revert to an honorary position. Mr. Ames, however, becomes an official under conditions similar to those prevailing during the term of Judge Beaty. Mr. Ames will sever his connection with The Texas Company, where he has been vice president and general counsel.

All other officials of the organization were re-elected as follows:

H. R. Gallagher, president of Consolidated Oil Company, Vice President at Large.

C. F. Roeser, Roeser & Pendleton, Vice President for Production.

D. J. Moran, president of Continental Oil Company, Vice President for Refining.

W. T. Holliday, president of Standard Oil Company of Ohio, Vice President for Marketing.

Axtell J. Byles, president of the Tidewater-Associated Oil Company, Treasurer.

Lacey Walker, Secretary and Assistant Treasurer.

Directors of the Institute were elected by the membership at the first general session of the meeting Wednesday afternoon. Nominations of the board of councillors were accepted as follows:

Manufacturing Group

Pacific Coast: John A. Brown, General Petroleum Corporation, Los Angeles; Central United States: Roy B. Jones, Panhandle Refining Company, Wichita Falls; Eastern United States: Frank B. Fretter, National Refining Company, Cleveland, Ohio; G. R. Nutty, Gulf Refining Company. Pittsburgh, Penna.; W. E. Smith, Standard Oil Company of Kentucky, Louisville.

Distribution Group

Pacific Coast: K. R. Kingsbury, Standard Oil Company of California, San Francisco; Central United States: Henry M. Dawes, Pure Oil Company, Chicago; L. L. Marcell, White Eagle Oil Corporation, Kansas City; Eastern United States: E. W. Sinclair, Consolidated Oil Corporation, New York.

Transportation Group

Ships: J. Howard Pew, Sun Oil Company, Philadelphia; Pipe Lines: C. H. Kountz, Sinclair Prairie Pipe Line Company, Independence, Kansas.

Supply Group

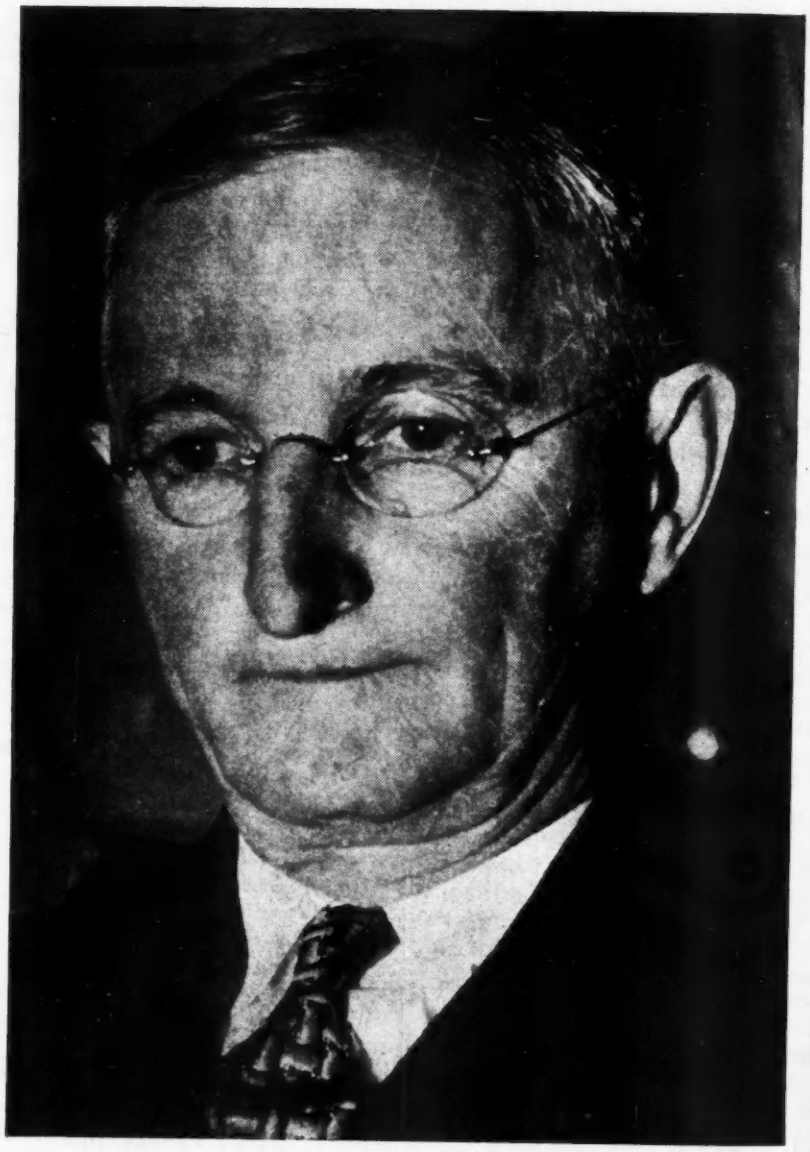
John A. Geismar, National Supply Company, Toledo, Ohio.

Foreign Trade Group

Walter C. Teagle, Standard Oil Company of New Jersey, New York.

At Large Group

C. B. Ames, The Texas Company, New York; E. J. Bullock, Standard Oil Com-



Judge Ames came into the petroleum industry in 1920, when he joined the legal staff of The Texas Company. Recently he was named vice-president and general counsel and transferred his headquarters to New York. Previously he had maintained his residence in Oklahoma City. He is a native of Georgia and practiced law in his home city of Macon following graduation from college. He moved to Oklahoma City in 1899, where he engaged in the practice of his profession. From 1911 until 1913 he was presiding judge of division No. 1 of the Supreme Circuit Commission of the State. He was president of the Oklahoma State Bar Association in 1916. He was appointed assistant attorney general of the United States in 1919 and served until September, 1920, when he joined The Texas Company.

INSTITUTE RETURNS TO CHICAGO FOR 1933 ANNUAL MEETING

The Executive Committee of the Board of Directors of the American Petroleum Institute decided at the close of the thirteenth annual meeting in Houston to return to Chicago and the Stevens Hotel for the 1933 meeting.

Meeting dates have been arranged in order that those attending the Institute's annual meeting can also observe the World Fair. The A. P. I. meeting is scheduled for October 24, 25 and 26.

pany (Indiana), Chicago; Jacob France, Mid-Continent Petroleum Corporation, Tulsa; Wirt Franklin, Wirt Franklin Petroleum Corporation, Ardmore, Oklahoma; S. A. Guiberson, Jr., Guiberson Oil Company, Dallas; William F. Humphrey, Associated Oil Company San Francisco; D. J. Moran, Continental Oil Company, Ponca City, Oklahoma; W. G. Skelly, Skelly Oil Company, Tulsa; Robert W. Stewart, Chicago; Howard Bennette, Western Petroleum Refiners Association, Tulsa.

Other members of the board came from action of the board of directors, which selected the following:

H. R. Gallagher, Rio Grande Oil Company, New York; R. G. A. van der Woude, Shell Petroleum Corporation, St. Louis; Ralph B. Lloyd, Independent Oil Producers Agency, Los Angeles; T. H. Barton, Lion Oil Refining Corporation, El Dorado, Arkansas; Ben Harris, Oil Well Supply Company, Pittsburgh; H. L. Hunt, Tyler, Texas; J. C. Van Eck, Shell-Union Oil Corporation, New York; W. M. Keck, Superior Oil Company, Los Angeles; F. S. Fales, Standard Oil Company of New York, New York; E. R. Brown, Magnolia Petroleum Company, Dallas, Texas.

These with those held over give the board of directors 77 members, an increase of five over last year.

West Konowa Pool Gets 800 Barrel Daily Quota

Seminole, Okla.—The West Konawa pool in southeastern Pottawatomie County has been placed in proration Class C and given a daily allowable of 800 barrels based on a daily potential of 2175 barrels.

Gypsy Oil Company is rigging up O'Connor 1, CNW NW SE Section 25-6n-4e, east offset to the discovery well. Watchorn Oil & Gas Company et al's Lowry 1, CNE SE NE Section 30-6n-5e, is a wildcat location 1½ miles east and a quarter-mile north of the discovery well.

Industry Faces Period *of* Lowest Gasoline *Consumption*

Economic Forecasting Committees Estimate Decline of 12 Per Cent for Six Months Period

Houston.—Further reduction in gasoline consumption is the prospect for the petroleum industry according to estimates prepared by two committees whose reports were presented to the American Petroleum Institute at the annual meeting in Houston. The drop in consumption for the six months from October, 1932, through March, 1933, as compared with corresponding months of the past period will be from 10 to 12 per cent, as interpreted by the Institute own committee on economics.

The Volunteer Committee of Petroleum Economics of the Federal Oil Conservation Board placed the drop in domestic consumption at 7.6 per cent for the period and the loss in foreign demand at 29.8 per cent, a total reduction of 10.1 per cent.

The Committee on Refinery Statistics and Economics of the A. P. I. predicted a more serious drop in gasoline consumption, with 9.5 the figure for domestic and 32.9 the foreign percentage. The total drop indicated in this report is 11.7 per cent.

Both reports were studied by the A. P. I. committee which passed them along to the membership with opinions and conclusions. Following are excerpts from this committee report:

The total of the domestic and export items in each report indicates that the committees expect a reduction in total demand of between 10 and 12 per cent.

Stocks of motor fuel on October 1, 1932 aggregated 51,420,000 barrels. These stocks were 6,140,000 barrels in excess of the industry's own expression of adequate inventories as of that date which total 45,280,000 barrels. Of that total surplus the area East of California was responsible for 1,700,000 barrels while the California district had a surplus of 4,450,000 barrels.

The committees are agreed that the existence of excess inventories is a serious drawback to the economic stability of the industry. An examination of the total surplus existant over the past year or more indicates that practically no progress had been made towards relieving the industry of this destructive burden.

Based upon the sub-normal demand anticipated during the period under consideration, both committees have reduced the levels heretofore accepted as economic stocks as of April 1. The federal committee places the economic level of stocks as of April 1, 1933 at 57,670,000 barrels while the Institute's committee felt that 56,760,000 barrels would be sufficient.

The two reports contemplating a decline of 10 to 12 per cent in total demand and placing the economic level of stocks on March 31, 1933 relatively close, reached the conclusion that the quantity of motor fuel required from domestic producers should be 12 to 14 per cent below that of the corresponding previous period.

Crude Oil

The two reports are relatively close in their estimates of total domestic crude required for the period but are 6,250,000 barrels apart in the quantity required to be run to stills. This difference is occasioned principally by the Federal Committee's higher forecast of motor fuel demand.

The domestic crude oil requirements from the production and stocks are shown on the Institute's report as averaging daily, 2,048,000 barrels, while a comparable figure calculated from the Federal Committee's report is 2,063,000 barrels. Practically two months of the period will have passed before these reports can receive the full attention of the industry during which time the production will have exceeded the average requirements. For the succeeding four months of the period therefore the required supply will be only 2,000,000 barrels per day.

The Institute's statistical sub-committee did not indicate what portion of the crude requirements should be supplied from inventories. The Federal Committee, however, indicates that 2,900,000 barrels be supplied from stocks and the remainder from current production. Neither report attempts to cover the allocation of the required domestic crude oil production by fields, confining their presentation to strictly refining statistics.

Gas and Fuel Oils

Details of the gas and fuel oils are available only in the report of the American Petroleum Institute's Committee. Its forecast of total demand shows a decrease of 12.1 per cent, while supply shows a decrease of 17.9 per

cent. The lower supply is due to curtailed imports anticipated, reduced runs to stills and to a slightly lower yield. Based on the required crude runs stocks of gas and fuel oils at the end of March, 1933 are indicated at 117,750,000 barrels; 91,500,000 barrels in California and 26,250,000 barrels east of California. This is a reduction of 21,200,000 barrels for the period under review but leaves a more than ample supply for both areas.

Natural Gasoline

Natural gasoline produced in the field is off 40 per cent from the amount manufactured in 1929, but in the meantime refiners have installed vapor recovery plants to such an extent that the total supply of light fractions has increased, in the face of the falling off of public consumption of motor gasoline. Refinery vapor recovery plants have directly displaced markets formerly the main dependence of the natural gasoline manufacturer. Integrated companies, making vapor gasoline, have put products of their field natural plants on the market in competition with the products of the non-integrated companies, from whom they formerly purchased.

It is the considered opinion of many that if the so-called integrated companies and their subsidiaries will so order their own operations as to utilize individually all the natural and vapor gasoline they make, putting none of it on the market as such but only as a component of their finished motor fuels, the effect will be to create a fairly balanced condition. Refiners with no or insufficient natural and vapor recovery gasoline production will provide a reasonable outlet for the products of the non-integrated natural gasoline manufacturers.

As stated in all of our previous reports, we believe a balance between supply and demand may be struck if adherence is maintained to schedules of economic stocks. If surpluses occur in any particular refining district it tends to extend the limits of that district, beyond economic boundaries. This we believe is the cause of many of the disturbed conditions in the industry prevailing from time to time. These conditions would probably not occur if each district kept its stocks more closely in line with the economic schedules presented.

The required production of motor fuel shown on these reports is that which this committee thinks is economic after taking into consideration the probable demand and future economic stock levels. This production may be more or even less, depending entirely upon the manner in which the individual refiners regulate their own businesses. If production is more, then the committee thinks that such over-production will be uneconomic and must seriously affect the levels at which stocks will be as contrasted with what the reports indicate are the adequate quantities to have on hand.

Your committee recommends that the Board of Directors take suitable action to ask the Federal Oil Conservation Board to revise its report quarterly, and to extend the forecasted period three months. We would also ask that similar action be taken to request a revision of the Institute's report and that same be published.

To sum up the reports, it would appear that the industry will most likely experience the lowest relative consumption during the period of this forecast that it has felt for a number of years. The daily crude run to stills should be reduced approximately 100,000 barrels from present levels. These are the two most important conclusions to be drawn from the reports and it depends entirely upon the individual company executives whether the industry shall continue to keep its present statistical advantages and show improvement.

American Petroleum Institute's Committee of Refinery Statistics and Economics Summary of Forecast of Demand, Economic Stocks and Required Supply

October 1, 1932 to March 31, 1933 (Forecast)
vs.
October 1, 1931 to March 31, 1932 (Actual)
(Thousands of Barrels)

MOTOR FUEL

(Details Table II)

ITEM	LAST QUARTER 1932 Total	LAST QUARTER 1932 % Change	FIRST QUARTER 1933 Total	FIRST QUARTER 1933 % Change	SIX MONTHS Total	SIX MONTHS % Change
DEMAND						
Total	94,000	—12.7	80.800	—10.6	174,800	—11.7
Domestic	87,500	—10.6	74,500	— 8.2	162,000	— 9.5
Exports	6,500	—34.1	6,300	—31.6	12,800	—32.9
STOCKS						
Change During Period	—750		+6,090		+5,340	
Beginning of Period	51,420		50,670		51,420	
End of Period	50,670		56,760		56,760	
SUPPLY						
Total	93,250	—18.0	86,890	—14.9	180,140	—16.5
From Imports	400	—84.2	100	—97.2	500	—91.7
From U.S. Producers	92,850	—16.5	86,790	—11.9	179,640	—14.3
Straight-run	44,310	—18.6	41,220	—14.3	85,530	—16.5
Cracked	40,090	—13.0	37,300	— 8.9	77,390	—10.6
Natural Gasoline	8,170	—21.0	7,980	—16.7	16,150	—19.0
Benzol	280	—27.8	290	—20.3	570	—24.2

CRUDE OIL

DEMAND						
Total	198,460	—14.5	185,090	— 9.9	383,550	—12.3
Export	6,250	+ 5.8	5,750	+ 4.2	12,000	+ 5.0
Domestic	192,210	—15.0	179,340	—10.3	371,550	—12.8
Runs to Stills	188,010	—14.2	175,140	—11.9	363,150	—13.4
Used as Such	3,000	—47.8	3,000		6,000	+15.2
Transfer to Fuel (California)	1,200		1,200	—22.4	2,400	+63.5
STOCKS						
Beginning of Period	353,750					
End of Period						
SUPPLY						
Total	198,460	—14.5	185,090	— 9.9	383,550	—12.3
From Imports	5,400	—55.1	5,400	—52.9	10,800	—54.0
From Domestic Prod.						
From Stocks	193,060	—12.2	179,690	— 7.3	372,750	— 9.9
DAILY AVERAGE DOMESTIC CRUDE OIL REQUIREMENTS (From Production and Stocks)	2,098	—12.2	1,997	— 7.3	2,048	— 9.9

NOTE:—Percent change calculated on daily average basis due to February, 1932, having 29 days.

New Conception *Report Gets No Action* From Institute

Houston.—What the petroleum industry came to know as the "new conception of oil production" came before directors of the American Petroleum Institute in a report from the committee, named in 1931 at the annual meeting in Chicago. The directors heard the report at Houston but took no action. The report was received and filed.

The committee report was only a set of general rules, concerned chiefly with unit operation.

Amos L. Beaty in his annual address gave some insight into the difficulties of unit operation. He reviewed the barriers both physical as to the structure and reservoir energy as well as legal rights of land owners and lease owners and classed them as obstructing compulsory unit operation. On this he said:

"It is hard to envisage workable apportionment of reservoir energy without compulsory unit operation.

"Voluntary unit operation is a different thing. There never was any doubt about it. There the equities can be adjusted by covenant. The economies are such that owners can well afford to make what they feel are concessions. It is a sensible and commendable practice. To my mind it is a late ripening flower. And these very studies of the committee, if they serve no other purpose, will drive home to the industry the importance of voluntary unit operation. For that reason if no other they should be studied."

The set of general rules offered by the committee, of which Charles F. Roeser was chairman, were set down as principles under which the matter of better operation of oil fields may be approached. These rules are:

"1. (a) Equitable ratable production should be practiced in each pool.

"1. (b) In newly discovered pools equitable ratable production conforming to the new conception will be accomplished by allowing each property in the pool to produce from day to day or time to time that proportionate part of the daily allowed production in the pool that the estimated recoverable oil under each such property at the opening of the pool bears to the total estimated recoverable oil in the pool at such time.

"When estimates as of said time are not to be had, then the ratios should be based on estimates as of the earliest practicable date. Estimates subsequently found to be in error should be corrected and adjustments in production corrected accordingly. In cases of the application of the new conception to pools already developed and under operation the estimated recoverable oil would doubtless have to be made in view of conditions existing at the time the new conception is applied thereto, inasmuch as disproportionate production previously taking place would probably have to be regarded as permitted.

"Petroleum engineers are devoting additional study to the subject of equitable ratable production to carry out the new conception and will probably suggest qualifications of the above statement on the subject. The engineers believe that a study of subsurface pressures will give very important data for regulation of production to accomplish ratable production.

"1. (c) The relative recoverable reserves of oil and gas in place in the several separately owned tracts of land in a pool which has been proven as to area by drilling, can be estimated with reasonable accuracy from time to time in the course of the operation of the pool by a practical application of the necessary and known factors and comparing the various proven tracts one with another, where the formation is of uniform sand or is of limestone of uniform texture. This may not always be accomplished where the formation is composed of unconsolidated sands or of cavernous limestone.

"2. Production of gas from free gas areas in oil pools should be restricted to whatever extent necessary to prevent migration of oil into such areas and to secure maximum recovery of oil from the oil areas.

"Under the new conception the owners of the gas areas are entitled to reasonable compensation for their gas which is used in oil recovery or for delay in production. This compensation may take any one or more of a variety of forms dependent upon the existence or non-existence of a market and other factors. For example, the gas cap owners may receive in lieu of gas through their wells gas at proper pressures produced from oil wells; or, they may be paid in money or in oil for the volume of gas involved; or, residue or other gas may be returned to the gas cap in similar volume and at practical working pressures.

"3. The total pool allowable production should never exceed the amount that can be produced therefrom without physical waste. If under physical operating conditions the pool could otherwise produce in excess of the reasonable market demand for oil therefrom, nevertheless, the allowable production should in no event exceed such reasonable market demand for the reason that if production is not so limited the takings will be disproportionate and unratable and both physical waste and inequities as between properties will necessarily result.

"4. Inasmuch as the majority of producers depend upon crude oil purchasers for an outlet for their production it will be necessary that the buyers of oil purchase and take ratably from all producers. Where there is more than one buyer in a pool they can distribute their connections and takings so as to give every such dependent producer an outlet for his daily permitted production. This is readily obtainable when production does not exceed reasonable market demand for oil from the pool.

"5. Unit operation is the best method for approaching and accomplishing the new conception in oil production because it enables the operators in a single pool to determine the physical characteristics of the pool in a most orderly and scientific manner and to inaugurate and carry out a development and production program best adapted to the pool involved and to adjust by common agreement the rights and equities of all owners therein. In the event the laws of the state do not now permit agreements for unit operations, its conservation agency should be empowered, with proper public safeguards, to authorize such agreements.

Foreign Output Shows Decline

Washington, D. C., Nov. 15.—August production in seven of the nine leading foreign oil countries showed a decline of nearly one million barrels from July, according to revised figures compiled today by the Petroleum Section of the Department of Commerce. Production in Colombia, Mexico, Persia, Roumania, Russia, Trinidad and Venezuela, totaled 36,062,000 barrels for the month against 37,161,000 the preceding month, it was stated.

Figures for Argentina and Netherland Indies are not yet available.

The reduction in output, the reports disclosed, was general in all countries except Roumania where, according to latest advices, the increase of over 600,000 barrels in August was followed by a further increase in September of more than 95,000 barrels to a total of 5,125,968 barrels. Production in Russia, it was shown, dropped from 13,442,000 barrels in July to 12,722,000 in August and to 12,103,000 in September.

Well Spacing *and* Pressures *Studied at* Technical Sessions

Houston.—The 13 papers which were included on the American Petroleum Institute's program here for the production division of the industry embraced a wide variety of subjects, with stress laid upon two general topics which are now commanding particular interest among petroleum engineers. Those two topics concerned (1) proper well spacing, and (2) maintenance of pressure in the producing formation.

Aside from seven papers on those two general topics, there were special papers on two outstanding oil fields, Big Lake, Regan County, West Texas, where oil is found at almost 9000 feet; and Kettleman Hills field, California, second only to East Texas in producing potentialities, and a very interesting field by virtue of its great depth and other features.

Two papers, in recognition of the desirability for adjusting operating practices to the current demands for economies, dealt with economies in drilling practice.

Another led the way into controversial ground, delving into the merits of using tapered flow columns in oil wells, which have been advocated lately by certain sponsors. In questioning or contradicting some of the theories and ideas advanced by those recommending the tapered strings, the author of the paper finished with a clear-cut conclusion, stating "Part of the theory at least upon which the superiority of tapered tubing has been predicted is subject to verification," and adding, "Comparative tests performed with different flow columns failed under the limited range of conditions covered to detect any superiority for the tapered columns."

The last of the papers presented before the production division dealt with a subject of a pioneering nature, recommending that the Institute induce manufacturers of pumping units to furnish data enabling operators to know definitely the capacities, horse power ratings, and other important facts concerning the units, so that such pumping equipment may be selected in any given instance in conformity with the particular requirements which are involved. Aside from the scheduled paper on the subject comment on it was offered in two written notes, supporting the recommendations in the original paper and offering other suggestions.

Papers on Well Spacing

The topic of proper well spacing, which was mentioned above, was dealt with in four papers, as follows: "Hydrodynamics of Reservoir Drainage and Its Relation to Well Spacing," by H. D. Wilde, Jr., and T. V. Moore, Humble Oil & Refining Company; "Effect of Additional Wells on Ultimate Yield," by J. J. Zorichak, Midwest Refining Company, who was not present, and whose paper was read by T. V. Moore; "Drainage and its Effect on Well Spacing," by R. W. Phelps, consulting engineer, who also was not present; and "Well Spacing in the Oklahoma City Field," by Donald R. Knowlton, Phillips Petroleum Company.

There were three papers embracing the subject of maintenance of pressure in the producing formations, as follows: "Importance of Free-Gas Control in Maximum Oil Recovery, by J. R. McWilliams, Skelly Oil Company; "Practical Benefits of Pressure Maintenance in Petroleum Production," by William N. Lacey, California Institute of Technology; and "Pressure Maintenance in East Texas," by John A. Ritter, Sun Oil Company.

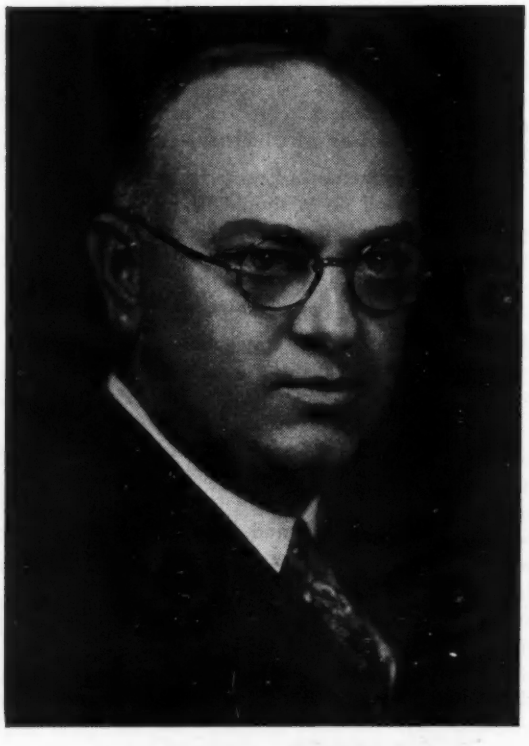
The two papers on outstanding fields were as follows: "Deep Well Completion Practice in Reagan County, Texas," by E. V. Foran, consulting engineer; and "Kettleman Development and Production Problems," by E. G. Gaylord, chief petroleum engineer for Standard Oil Company of California, which controls about 50 per cent of the field. Mr. Gaylord was not himself present at the meeting.

The two papers on economies in operations are here listed: "Sub-Surface Economies in Drilling Practice," by Bruce Barkis, Rio Grande Oil Company, and R. D. Copley, Standard Oil Company of California; and "Drilling Practices and Economies in the Oklahoma City Field," by K. A. Covell, The Pure Oil Company, and C. P. Parsons, Halliburton Oil Well Cementing Company.

The paper entitled "A Discussion of the Merits of Tapered Flow Columns," was written and presented by John T. Hayward, Barnsdall Oil Company; and that on "Selection and Rating of Pumping Units," was prepared and read by Bowman Thomas, Humble Oil & Refining Company.

RE-ELECTED CHAIRMAN OF DIVISION OF PRODUCTION

American Petroleum Institute



CHARLES F. ROESER

who will serve another year as chairman of the Division of Production following his election at the annual meeting in Houston.

Injunction Not To Be Pressed At Conroe

Houston. — There will be no violation of proration allowables in Conroe field, according to a statement November 16 by R. D. Parker, supervisor of the oil and gas division of the Texas Railroad Commission, when interviewed on the possible effect of the injunction requested by Hamilton and Hill to restrain the commission from enforcement of proration rulings on their wells at Conroe. Mr. Parker stated Hamilton and Hill had agreed not to press for the injunction.

A. P. I. Makes Safety Awards at Houston

Houston.—For the first time the American Petroleum Institute paid tribute to safety work in the oil industry, when awards were presented to the concerns with the highest records for 1931. These awards are certificates which were handed out at the open session November 16 to representatives of the winning concerns.

The winning concerns and classifications follow:

For the best safety record in all departments, Texas Pacific Coal & Oil Company, Fort Worth.

For the refining department employing more than 1600 men, Standard Oil Company (Indiana).

For the refining departments employing fewer than 1600 men, General Petroleum Corporation, Los Angeles.

For the marketing department employing more than 200 men, Standard Oil Company (Indiana).

For the production department employing more than 1000 men, Empire Companies, Bartlesville, Oklahoma.

For the production department employing fewer than 1000 men, Fullerton Oil Company, Fullerton, California.

For the natural gasoline department employing more than 160 men, Midwest Refining Company, Casper, Wyoming.

For the natural gasoline department employing fewer than 160 men, Lone Star Gas Company, Dallas, Texas.

For the pipe line department employing more than 500 men, Oklahoma Pipe Line Company, Muskogee, Oklahoma.

For the pipe line department employing fewer than 500 men, Texas Pacific Coal & Oil Company, Fort Worth, Texas.

General Committee Production Division

Houston, Texas.—Members of the general committee of the division of production of the American Petroleum Institute, selected to serve in 1933, were announced at the annual meeting of the organization in Houston.

Five members were appointed to the committee by the president of the Institute, as follows: W. N. Davis, Phillips Petroleum Company, Bartlesville, Oklahoma; W. S. Farish, Humble Oil & Refining Company, Houston; Wirt Franklin, Wirt Franklin Petroleum Corporation, Oklahoma City; J. Edgar Pew, Sun Oil Company, Philadelphia; and L. P. St. Clair, Union Oil Company of California, Los Angeles.

Twenty members of the committee were elected by the production division. These include: D. S. Bushnell, Northern Group of Pipe Lines, New York; C. E. Crawley, Consolidated Oil Corporation, New York; O. D. Donnell, Ohio Oil Company, Findlay, Ohio; A. Jacobsen, Amerada Petroleum Corporation, New York; L. D. Jurs, Associated Oil Company, San Francisco; E. A. Landreth, Landreth Production Company, Fort Worth, Texas; C. H. Lieb, Carter Oil Company, Tulsa, Oklahoma; M. E. Lombardi, Standard Oil Company of California, San Francisco; W. L. McLaine, General Petroleum Corporation of California, Los Angeles; Marcus McLaughlin, Magnolia Petroleum Company, Dallas; E. J. Nicklos, Continental Oil Company, Ponca City, Oklahoma; W. M. O'Connor, Atlantic Refining Company, Philadelphia; R. Ogarria, The Texas Company, New York; A. W. Peake, Standard Oil Company (Indiana), Chicago; E. H. Salrin, Tidewater Oil Company, Tulsa, Oklahoma; H. M. Stalcup, Skelly Oil Company, Tulsa; H. R. Straight, Empire Companies, Bartlesville, Oklahoma; T. E. Swigart, Shell Petroleum Corporation, Houston; W. K. Whitford, Barnsdall Oil Company, Tulsa, Oklahoma and K. Winship, Gypsy Oil Company, Tulsa, Oklahoma.

Chapin Discusses Tax On Gasoline

Washington, D. C.—Declaring that a number of states have already reached a point where their taxes on gasoline invoke the law of diminishing returns, Secretary of Commerce Chapin, addressing the annual meeting of the American Association of State Highway officials here, today declared that such levies should be confined to the raising only of revenue for road construction and not made a vehicle of revenue for other purposes.

Discussing the problem following his address, the secretary pointed out that the very high taxes now in force in some of the states have materially reduced gasoline consumption and, accordingly, the consumption of crude oil.

Further, he added, such taxes are a handicap to automobile sales, and for a number of years the oil and automotive industries have aided the Bureau of Standards in financing an investigation of motor fuel for the purpose of increasing mileage and reducing engine wear.

The present trend in the automotive industry, said the secretary, himself a manufacturer of automobiles, is toward lighter cars which will give more mileage per gallon of gasoline.

The oil industry, Mr. Chapin declared, has a very great stake in this problem, since excessive taxation is directly reflected in lowered consumption.

Richfield Deal Not Yet Closed

Los Angeles, Calif., Nov. 14.—Much interest is being shown in the race between Standard Oil Company of California and Consolidated Oil Corporation for assets of Richfield Oil Company. Both the bondholders and creditors committees recommend acceptance of Standard's offer, but the bondholders committee of Pan-American Petroleum Company, a Richfield subsidiary, does not think the Standard offer better than Consolidated Oil Corporation's.

The way seems to be left open for further bidding on the part of Consolidated Oil Corporation.

Cities Service Company once aspired to gain control of Richfield Oil Company, but apparently withdrew sometime ago.

Richfield Oil Company under the present receivership is marketing around 10,000,000 gallons of gasoline monthly.

Bureau of Mines Oil Work Curtailed by Cut Budget

Washington, D. C.—Reductions in appropriations ordered at the last session of Congress for the current fiscal year have necessitated abandonment for an indefinite period the Bureau of Mines' petroleum research upon which years of development have been expended.

Little in the way of oil studies can be carried on this year, it was disclosed November 16 in the annual report submitted by Director Scott Turner to the Secretary of Commerce, and no steps can be taken toward securing the much needed engineering laboratory at the Bartlesville Experiment Station.

The need for further and more current data with respect to natural gas is stressed in the report, which points out that the major portion of inquiries received at the bureau from the oil industry now deal with this subject. Despite the growing importance of natural gas production and distribution, it is stated, the bureau has been able to give it but limited attention.

W. F. Holt, who captained the Humble Oil & Refining Company safety team which won first prize for the south-western division in a first aid contest held by the emergency corps last month, was electrocuted November 16 at Pierce Junction field when he contacted a wire carrying 12,000 volts.

Independent Association *Will Concentrate Work* On Tariff

Members Decide to Establish One Central Organization Rather Than State Bodies.

Tulsa.—The Independent Petroleum Association of America will confine its activity in coming months to securing a tariff or excise tax on foreign petroleum and its refined products equal to the differential in production costs between the United States and any foreign country from which petroleum may reach the American market, and to the welding of a strong national organization by which it may accomplish the things needed both by the independent operators and the industry as a whole. These resolutions along with important changes in the constitution headlined events in the annual meeting which took place at the Mayo Hotel in Tulsa, on Monday, November 14, as many of those in attendance were preparing to leave for Houston to attend the annual meeting of American Petroleum Institute.

Outstanding among organization changes was the decision to do away with state organizations and consolidate the work directly under the national organization. Perhaps to many of those who are now members and those who will be approached to join, the reduction of annual dues from $25 to $10, was important. Due to the one-day session it was necessary to rush the order of business and speeches were of short duration. President Wirt Franklin, in opening the meeting, said "I have assurances of support of a tariff from practically the entire industry. There are of course some exceptions. In the recent naphtha hearing before the Customs Department, we found representatives from practically all major companies on our side of the table. I am in hopes that this indicates a change in the attitude of those who have fought a tariff from the start. Apparently it depends largely upon 'whose bull is gored' as to the attitude that may be expected. The present excise tax is not what we wanted but with the ground work laid a strong national organization, eternally vigilant, should be able ultimately to secure a tariff of at least one dollar per barrel on foreign crude." Differential in production costs as between the United States and Venezuela was set at approximately $1.03 per barrel in the most recent report of the Federal Tariff Commission.

Following a brief and concise report by Russell B. Brown, counsel for the association, Harold B. Fell, assistant to the president and chairman of the policy and organization committee, presented resolutions by which the several important organization changes were effected. In addition to concentration on an adequate tariff, it was resolved to immediately secure correction of the present language of the revenue act so that any possible or potential carburant motor fuels shall be required to pay tax on the same basis as gasoline. In the recent customs hearing issue was taken with a treasury decision which permits the entrance of foreign naphtha under the "petroleum derivatives other than motor fuels" clause at a tax of a half-cent per gallon. Records show that in recent months many thousands of gallons of Roumanian and other foreign naphthas have entered the United States under this tax, unquestionably to be used for blending in the production of motor fuels. Further resolution commended the activities of those organizations promoting state gasoline tax reductions, the use of gasoline taxes exclusively for highways, elimination of gasoline tax evasion, and the curbing of domestic production to demand.

The Independent Petroleum Association, Mid-Continent Royalty Association, and Tulsa Chamber of Commerce, joined in a luncheon which approximately 200 attended. Carl McGee, editor of the Oklahoma News and early Oklahoma settler, urged independent oil men to fight for a strong national organization which would mold public sentiment in sympathy with problems faced by the industry. Commenting on recent action of several major companies in refusing to meet the new crude oil price schedule, McGee said, "Don't think for a minute that they do not pay attention to public sentiment. Many times within a few hours after my paper is on the streets I have telegraphic communications from New York or elsewhere discussing my stand in an editorial. During the recent struggle to maintain and increase crude oil prices many representatives of the major interests were in my office arguing with me on editorial stands. I am as sure as I am that I'm standing here that the salvation of the independent oil man is to struggle for a strong organization not only for his protection but for the benefit of the industry as a whole."

President Franklin outlined the progress which has been made in the tariff fight and emphasized several of the points already made by McGee.

The afternoon session was devoted to nomination and election of officers for the coming year. Following close of the general session the executive committee announced election of officers as follows: Wirt Franklin, president; Harold B. Fell, assistant to the president; Marvin Lee, executive vice president; C. E. Buchner, executive manager; Russell B. Brown, counsel. The executive committee for the coming year will include, Wirt Franklin, Marvin Lee, J. R. Parten, Geo. A. Dye, and Paul S. Ache. It was decided to name a definite number of vice presidents for the various oil producing states and to grant the executive committee privilege of naming additional officials in certain of the states. State vice presidents are, T. H. Barton, Arkansas; John Elliott, California; Ralph Hartzell, Colorado; William Bell, Illinois; Marvin Lee, Kansas; Paul G. Blazier, Kentucky; J. R. Parten, North Louisiana and W. Scott Heywood, South Louisiana; William Fulton, Montana; Van S. Welch, New Mexico; H. C. Schumacher, North Dakota; I. C. Grimm, Ohio; Paul S. Ache, Oklahoma; W. J. Brundred, Pennsylvania; Marrs McLean, Frank Zoch, Ed Landreth, Freeman Burford, and Gus Taylor, Texas; H. S. Hallinan, West Virginia; and Ray Phebus, Wyoming. Vice president from the other oil producing states will be named as soon as favorable representation can be secured.

Excise Tax Disturbing World Markets

Washington, D. C., Nov. 15.—Imposition of the excise tax on imported petroleum will not serve to eliminate foreign competition with the American product, but merely change the scene from the United States to foreign markets, it was declared today by officials of the Department of Commerce.

Commenting upon the experience of the first four months operation under the law, it was pointed out that while it is still difficult to forecast the long-range trend, there are indications that some of the foreign countries which during the first half of this year were exporting to the United States are now shipping their oil to other markets where, however, it will continue to compete with the American product. This is particularly true, it was stated, with respect to oil from the Netherland West Indies which formerly came to the country but is now being shipped to Europe.

Thurman Hill Demands Uniform Price *from Major Purchasers*

Houston.—Unless crude oil buyers come to a uniform price that allows a profit to producers, there will be no further assistance from state officials in gaining reduced gasoline taxes.

Such is the substance of a statement by Thurman Hill, public service commissioner of Kansas, issued here November 16, during the American Petroleum Institute meeting, and addressed particularly to Standard Oil Company (Indiana) and Humble Oil & Refining Company. The determination to assist no future tax reduction programs applies only to Oklahoma and Kansas, and Cicero I. Murray of Oklahoma concurs in the Hill statement.

The Hill statement follows:

"It may be presumptious for a mere public official to comment on the activities of the oil leaders. As an official, I realize many oil men have the utmost contempt for us except when they need us to get themselves out of pits dug with their own errors.

"However, as a Public Service Commissioner, it is my belief that we have more courage in facing the problems confronting the industry than do the giants of the petroleum world who tread softly and swing stuffed sticks. Everyone at this meeting is thinking in terms of price and talking weasel words about the election of officials and conservation. Some of the leaders say to us as officials of oil producing states, 'If you will help us reduce gasoline taxes and eliminate bootlegging of crude and its by-products, maybe we can pay a decent price for crude.'

"Before this, we were told if we curtailed production to meet the market demand, a fair price would be paid for crude. We wonder what the next excuse will be! We suggest to the industry that the cry of 'wolf' has been heard by us quite often, and now we demand good faith on the part of the industry if it is to expect further cooperation from the public.

"It is only fair to say to the companies taking the leadership in the recent price advance that they have kept the faith—but to those companies, particularly Standard of Indiana and Humble, the 'bad boys of the industry' that in my judgment there will be no legislation in Kansas or Oklahoma coming out of the next sessions to reduce gas taxes or to prevent gas bootlegging unless all companies are in accord on a fair price by the time the legislatures meet, and by fair price we mean the new price of $1.12 top.

"If the new price is not met before the law makers get into action, in my opinion the only legislation to come out of Kansas and perhaps Oklahoma will be a law divorcing pipe lines from purchasing companies and making them bona fide common carriers. In doing this the legislatures would be justified, because oil purchasers contend it is losses in marketing that prevents a fair price being paid for crude. None have ever contended the pipe lines lost money! So why not relieve the producers from carrying the losing load of the marketers and refineries.

"If, on the other hand, the oil industry can come to us with clean hands and say 'we are paying a price for crude that will return a fair profit to the producer and compensate the states through taxes for the withdrawal of your irreplaceable natural resources—therefore we request you help in ridding the industry of its barnacles of gas taxes and bootleggers', then the industry will find us ready and eager to battle for it.

"For it is not alone the price received for derivative that should determine the price to be paid for crude—it is that plus the cost of production.

"So again permit me, not as a giant oil leader, treading softly and swinging stuffed sticks, but as a public official under obligation to no one except the people of my state, to warn oil purchasing companies that no longer will the oil states permit an irreplaceable natural resource to be taken from it unless there is paid for it the cost of production plus a reasonable profit.

"Mr. Cicero Murray of Oklahoma joins with me in this expression."

Alpha Case In High Court

Austin, Texas, Nov. 14.—Attorneys representing the Alpha Petroleum Company were heard yesterday by the supreme court of Texas, on their request for a mandamus restraining the railroad commission and other state officials from interfering with the company's oil operations. Alpha Petroleum Company has production in the Conroe, Montgomery County, field and more than a month ago it obtained a restraining order from the district court at Conroe. Later this order was dissolved and the state then obtained an order restraining the company from violating orders of the railroad commission. The new litigation is an attack on this latter order.

U. S. Supreme Court to Decide Depreciation Claim Validity

(The Oil Weekly Washington Bureau)

Washington, D. C., Nov. 14.—The United States Supreme Court today agreed to determine whether under the Revenue Act of 1926 the capitalized cost of drilling oil wells and of hauling and placing equipment in the wells is recoverable through depreciation or through depletion, granting petitions of Petroleum Exploration for a review of a decision of the Fourth Circuit Court of Appeals and of the government for review of a decision of the Court of Claims.

The petition of the oil company to the court set forth that during 1925, 1926 and 1927, Petroleum Exploration capitalized on its books of account the total cost of new productive oil wells drilled, such charges representing amounts paid for equipment put into the wells, amounts paid for drilling wells, amounts paid for freight and haulage of the equipment and amounts paid for labor in installing the equipment in the wells. All of the wells had a life of more than one year. The company claimed that the entire cost of the wells was returnable to it through depreciation, but the Commissioner of Internal Revenue held that the "intangible drilling costs," which include the amounts paid for drilling, for freight and haulage of equipment and for labor in installing the equipment in the wells, was not returnable through depreciation but was recoverable through depletion.

The Board of Tax Appeals, to which the case was carried, decided in favor of the company, but the government took the case to the Circuit Court of Appeals where the board's findings were reversed.

A petition of the government for review of a decision of the United States

Court of Claims holding the Dakota-Montana Oil Company entitled to recovery of $19,096, with interest, representing the taxes paid upon deductions claimed for expenses incurred in drilling wells but not allowed by the Commissioner of Internal Revenue, covering the same ground as does the Petroleum Exploration case, was also granted by the Supreme Court.

In this case, the Court of Claims held that the expenses of drilling a well, which it considered an improvement to the property having been capitalized, were returnable through depreciation.

"A producing well is undoubtedly a physical property," the court declared in its decision, now appealed. "Only by the most refined process of reasoning can it be said that the derricks, casing, pumps, pipes, buildings and other equipment constitute parts of such physical property and are improvements upon the cost of which depreciation deductions may be had, and that the drill hole in which the casing is placed and through which, by use of pumps and other equipment, the oil is brought from beneath the ground to the surface, is not a physical property or an improvement within the meaning of the statute and the regulations.

"The physical property comprising a completed oil well includes every item of improvement or equipment necessary for the extraction of the oil from the ground. Without the drill hole the well is incomplete and would be a useless thing, in fact would not be an oil well."

One Day's Supply In Eastex Stocks

Tyler, Texas.—The equivalent of a full day's production of crude for the United States is now carried as routine working stocks in miscellaneous lease tankage in the East Texas oil field.

Stock tanks at the wells on October 1 held 2,618,646 barrels of high gravity oil, according to survey compiled by the Texas Railroad Commission. This represents a gain of 1,068,587 barrels during September, as lease inventories on September 1 were placed at 1,550,055 barrels. These figures do not include stocks held within and near the field in large tanks. The heavy increase in lease inventories during September was largely due to inability of property owners to obtain market relief, especially those refusing to entertain "sacrifice price" offers. The detailed report covering lease stocks shows a volume range from a few barrels to 16,698 barrels of crude on hand.

Shell *Concentrates* Operating Divisions *at Houston and Tulsa*

St. Louis, Mo.—General changes in the administration of Shell Petroleum Corporation's activities in the Southwest have been announced by R. G. A. van der Woude, president, to become effective as rapidly as the personnel transfers can be completed.

Control of exploration, land, production, crude oil purchasing and miscellaneous service department activities will be decentralized from St. Louis to Tulsa, and Houston, under G. S. Rollin and T. E. Swigart, respectively.

The appointment of H. H. Anderson and T. E. Swigart as general vice presidents of the corporation was confirmed, as was also the promotion of G. S. Rollin to general vice president from "vice president-production."

Mr. Anderson will continue to be located at St. Louis to assist the president in a general executive capacity. He has been with Shell Petroleum Corporation since April, 1932, and has had 15 years previous service with Shell Oil Company on the Pacific Coast and Shell Union Oil Corporation in New York.

Mr. Swigart has been with Shell Petroleum Corporation since July, 1932, and has had 10 years service with Shell Oil Company and previous service with the U. S. Bureau of Mines. He has attained prominence as national chairman of the American Petroleum Institute's Division of Development and Production Engineering and is well known to the members of the Mid-Continent and Gulf Coast oil fraternity.

Mr. Rollin has been with Shell Petroleum Corporation since June, 1918. He was appointed "vice president-production" in March, 1928, and has been located in St. Louis since September, 1927. Upon assumption of broader duties by Mr. Rollin, the position of "vice president-production" will be discontinued. Future responsibilities for production policies, divided as to their respective areas, will be vested in Messrs. Rollin and Swigart. G. R. Henson, at present chief exploitation engineer, will remain at St. Louis in charge of the head office production section.

Dr. W. van Holst Pellekaan will continue as "vice president-exploration" to be generally responsible for policies on geological, geophysical and scouting matters and the selection of potential oil lands. E. G. Robinson, assisting Dr. van Holst, will remain at St. Louis in charge of exploration and land activities in Michigan.

Decentralized activities in Oklahoma, Kansas and Panhandle, Texas, under jurisdiction of Mr. Rollin at Tulsa, will be in charge of R. E. Shutt, exploration manager; O. F. Ackley, land manager; R. B. Roark, production manager; F. C. Emshoff, office manager; E. A. Bacon, crude oil purchasing representative, and J. T. Dickerson, legal representative. Approximately 25 persons will be transferred from St. Louis to the Tulsa offices. The Tulsa offices will continue to be located in the Mayo Building.

Decentralized activities in Arkansis, Louisiana, New Mexico and Texas (except Panhandle), under jurisdiction of Mr. Swigart at Houston, will be in charge of A. M. McLeod, exploration manager; B. L. Ryan, land manager; E. G. Allen, production manager; F. W. Woods, office manager; and B. C. Clardy, crude oil purchasing representative. Of the above named department heads, all except Mr. Woods are being transferred from Dallas to Houston, as are approximately 145 other employees presently in the Dallas offices, which latter are to be closed. Mr. Woods and approximately 25 others will be transferred from St. Louis to Houston. The Houston offices will be moved from their present location in the Sterling Building to new quarters on the four upper floors of the Post-Dispatch Building at Texas and Fannin Streets. This 22-story Class A building in future will be officially named the Shell Building.

R. P. Bascom, vice president and general manager of Shell Pipe Line Corporation, has arranged for the transfer of the division pipe line offices and staff from Austin, Texas, to Houston. Under C. C. Ingram, division superintendent, this office controls the operation of the West Texas or McCamey-Houston pipe line and the East Texas or Kilgore-Houston pipe line.

Magnolia Has Extensive Block in South Alabama

Mobile, Alabama, Nov. 14.—W. L. Wood, land man for Magnolia Petroleum Company in the Southeastern States, was in South Alabama late last week curing title to this company's 60,000-acre block in Clarke County, Alabama. There is no immediate drilling obligation on this block, however.

It is reliably reported that Ohio Oil Company plans a second test in Mobile County, where it drilled a 5600-foot dry hole last August.

MARKETS ~ STATISTICS

Texas Responsible for Gain in Output; Oklahoma Down; Greece Using More Oil; California Overproducing.

20,000-Barrel Increase In U. S. Crude Production

CRUDE oil production of the United States during the week ending November 19 jumped upward by about 20,000 barrels above the previous week's daily average, the output being 2,128,390 barrels per day, according to estimates compiled by THE OIL WEEKLY. That figure was 30,000 barrels above the level recommended last week by the American Petroleum Institute as the quantity needed (from production and stocks) for meeting the nation's daily average domestic crude oil requirements, the Institute's committee on refinery statistics and economics having estimated such requirements at 2,098,000 barrels daily for the last quarter of 1932.

The sharp rise in production for the week of November 19 was caused by Texas, and would have been higher except for a substantial drop in Oklahoma.

Two sections of the state contributed materially to the sharp increase of Texas production, namely, the Gulf Coast country and West Texas. Under the influence of an important rise in output at Conroe, Gulf Coast production rose 11,000 barrels, to a new level of 134,250 barrels daily. West Texas meanwhile rose about 9000 barrels to 163,100 barrels daily. South Texas also increased more than 2000 barrels, East Texas was up somewhat also, with new wells coming in, while the allowable continued at 40 barrels daily pending the railroad commission's hearing at Austin scheduled to be held November 26. On that date the commission will begin a hearing on all fields in the state, preparatory to issuing its first orders under the new conservation law passed in the recent special session of the Texas legislature.

Oklahoma's average daily production for the week ended November 19 was 387,240 barrels, a decline of 10,000 barrels from the previous week's daily average. The Seminole district was up 15,000 barrels to 132,150 barrels, but Oklahoma City declined 24,000 barrels to 73,725 barrels, giving the state a substantial drop.

Louisiana registered a 3000-barrel increase, with the salt dome country contributing one third and the northern part of the state the remainder, bringing the state's average up to 66,825 barrels daily.

California fields individually showed little change aside from a 2500-barrel drop at Kettleman Hills, reducing that area's average to 59,500 barrels daily. The state's new daily average was 470,000 barrels, as compared with 472,000 barrels the previous week.

Cold Weather Freezes Refinery Gasoline Market

ALTHOUGH action of the Texas legislature, in passing a strong economic waste law, induced the expected improvement psychologically, any inclination of the refinery gasoline market to take an upturn was interrupted by near freezing weather which has prevailed over most of the Mid-Continent area during the week. Prices on motor fuels remained practically unchanged except that near the week end but little material appeared to be moving at the lower figures. Prices on the low octane grade ranged from 3⅞ to 4⅛ cents, with the average at about 4 cents. So little material was being moved that it was difficult to determine the going price. Jobbers had returned to their "over-night" buying policies. However, it appeared that much of the distressed material which was being offered during the preceding week had disappeared and low priced motor fuel was being offered only in small quantity. Continued cold weather caused natural gasolines to move up both in price and demand. The burning oil market continued to gain strength with prices practically unchanged.

Group 3 prices, exclusive of the one cent federal tax, appeared to be as follows:

Refinery Gasolines: Low octane U. S. motor, 3⅜ to 4 cents; middle octane, 4 to 4¼ cents; high octane, 4⅜ to 4⅝ cents; 60-62, 400 e.p., 4⅛ to 4¼ cents; 64-66, 390 e.p., 4⅜ cents; 64-66, 375 e.p., 4½ to 4¾ cents; and 68-70, 360 e.p., 4¾ to 5 cents.

Natural Gasolines: 74-76 gravity, 10 to 12 pound vapor, 4½ to 5 cents; 15 to 18 pound vapor, 3¼ to 3¾ cents; 20-24 pound vapor, 3 to 3¼ cents; and 24-26 pound vapor, 2½ to 2¾ cents. Only very limited amounts of the 10 to 12 pound vapor materials were available on the open market.

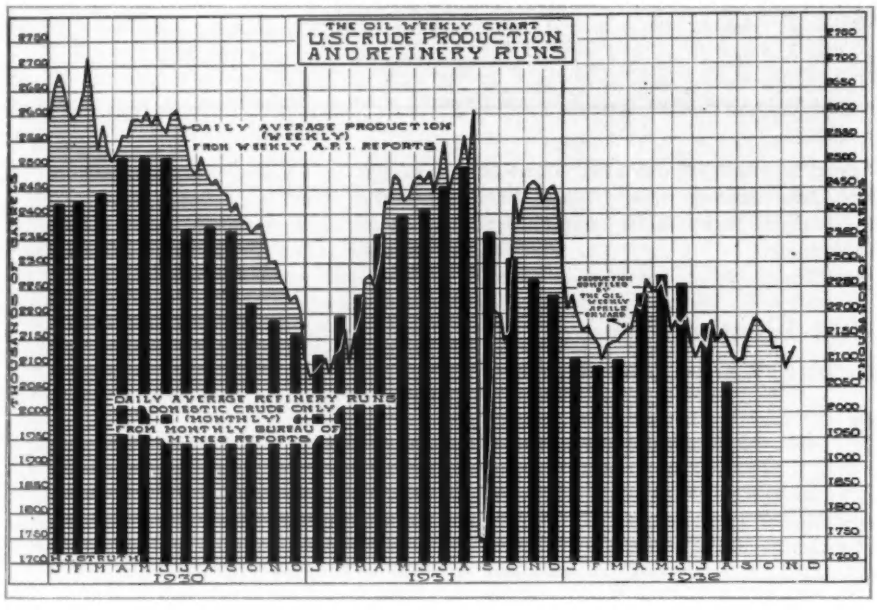
THE OIL WEEKLY
Estimated Average Daily Production in Barrels

District	For Week Ending Nov. 19	Nov. 12
TEXAS—		
Texas Panhandle	45,975	44,275
North and West Central Texas	72,900	72,350
West Texas	163,100	154,100
East Central Texas	49,000	48,500
East Texas Field	349,850	348,500
South Texas	58,250	55,800
Total Texas outside Gulf Coast	739,075	723,525
Texas Gulf Coast	134,250	123,150
Total Texas	873,325	846,675
OKLAHOMA—		
Oklahoma City	73,725	97,040
Seminole District	132,150	117,750
Other Oklahoma	181,365	182,365
Total Oklahoma	387,240	397,155
KANSAS—		
Ritz-Decker	16,810	15,500
Voshell	6,540	6,010
Other Kansas	73,275	74,095
Total Kansas	96,625	95,605
LOUISIANA—		
North Louisiana	30,525	28,675
Louisiana Gulf Coast	36,300	35,200
Total Louisiana	66,825	63,875
ARKANSAS	33,825	33,475
CALIFORNIA—		
Long Beach	68,000	68,500
Santa Fe Springs	56,000	58,000
Midway-Sunset	49,500	49,000
Kettleman Hills	59,500	62,000
Other California	237,000	234,500
Total California	470,000	472,000
MOUNTAIN STATES—		
Wyoming	35,100	34,350
Montana	6,100	6,550
Colorado	2,750	2,900
New Mexico	31,500	31,850
Total Rocky Mountain States	75,450	75,650
EASTERN STATES	103,650	102,350
MICHIGAN	21,450	21,050
Total United States	2,128,390	2,107,835

California Overproduction Causing Concern

OVERPRODUCTION in California is enough to nettle the conservative purchasers who have threatened to take only the allowable. The fields that are over are showing little disposition to bring their output down to the correct level. Kettleman Hills has joined Long Beach, Santa Fe Springs and other fields in the excess column. This field does not want to reduce its allowable to 54,000 barrels, and is producing around 5000 barrels too much oil. The state is about 30,000 barrels over its quota, and it is understood that the purchasers will stand for a nominal excess of around 10,000 barrels.

Interest shown by major companies in certain wildcat districts is interpreted as meaning that they are not adverse to leasing promising acreage. They have shown


THE OIL WEEKLY CHART
U.S. CRUDE PRODUCTION
AND REFINERY RUNS
DAILY AVERAGE PRODUCTION (WEEKLY) FROM WEEKLY A.P.I. REPORTS
DAILY AVERAGE REFINERY RUNS DOMESTIC CRUDE ONLY (MONTHLY) FROM MONTHLY BUREAU OF MINES REPORTS
THOUSANDS OF BARRELS
1930
1931
1932

no inclination to try the district which were most tricky during the height of the boom of a few years ago. Acreage which stands a chance for gas production, or the remote districts which have average odds against them are being received most warmly. Leasing is scattered and dull at the very best, however, and major companies are turning down tracts which they would have taken eagerly five years ago. Natural gas lands still hold a fair appeal to a few companies.

Gasoline prices have held better this fall than during the falls of 1930 and 1931, and failure of the crude market to keep pace has been a disappointment. Gasoline has long been the offending member of the marketing family, and its stability in the face of unsettled crude conditions is encouraging. The retail market is holding firm, and price cutters have been content to raise their prices along with the majors.

California exports have not shown the loss expected in some quarters. Better demand from a few districts has offset the loss in other markets. It is still possible to compete along the Atlantic Seaboard, but lower Eastern quotations would make it less attractive to ship gasoline and fuel oil through the Panama Canal.

The correct balance between Mid-Continent and California gasoline and crude prices will prevent shipment of gasoline to the West Coast.

Houston.—Cockburn Oil Corporation this week spudded Hawkins 1, Matagorda County wildcat located on Sheppards Mott, a geophysical prospect discovered by H. C. Cockburn but as yet unproven for production of oil.

Imports and Shipments From California Down

Crude oil and refined oil imports at principal United States ports for the week ending November 12 amounted to 687,000 barrels, according to the American Petroleum Institute, a daily average of 98,143 barrels, as compared with a daily average of 106,000 barrels for the previous week and 103,214 barrels daily for the four weeks ended November 12. Of the 687,000 barrels of the week of November 12 crude oil constituted 517,000 barrels, and the remaining 170,000 barrels was all fuel oil.

Receipts of crude and refined oils from California at Atlantic Coast ports for the week ended November 12 totaled 192,000 barrels, a daily average of 27,429 barrels, compared with a daily average of 26,857 barrels for the week ended November 5, and 33,536 barrels daily for the four weeks ended November 12. No California oils were received at Gulf Coast ports during the week of November 12.

October Gasoline Tax Collections

Washington, Nov. 17—Further increases in sales of gasoline and oils during September are indicated by figures just made public by the Internal Revenue Bureau covering October tax collections.

Receipts from the gasoline tax last month, the bureau reported, totaled $14,734,372, against $11,409,748 in September and $8,944,875 in August, making a total for the first full quarter under the new law of $35,088,995, a rate at which the estimated revenue of one hundred fifty million a year will be practically reached. This is one of the few taxes which now indicate a possibility of coming up to expectations.

Lubricating oil taxes last month totaled $1,764,024, against $1,399,304 in September and $822,775 in August, a total for the quarter of $3,986,103, or at the rate of approximately half of the thirty-three million dollars estimated for the year.

Total tax collections from all sources for the month were $89,849,895, against $72,356,032 in October of last year, it was reported.

Imports Indicate Greece Using More Petroleum

Athens, Greece.—Greece imported more liquid petroleum products during the first six months of 1932 than during the corresponding period of 1931. Comparative figures follow: 212,922 barrels of gasoline imported in the first half of 1932 against 177,090 barrels the corresponding period of 1931; 77,516 barrels of kerosene against 91,357 barrels; 42,255 of lubricants against 22,127 barrels; 373,120 barrels of crude and fuel oils against 232,654 barrels; 2034 metric tons of asphalt and bitumen against 2514 tons; and 103 of tar, against 102.

"Share the Work" Plan General in California

Los Angeles.—Most of the field work in California is now being done on a short-week basis, nearly all companies having reduced the working time of employees to spread the present labor requirements among the largest number. Several companies are using a five-day basis, others are employing the four-day week, while others are allowing their field men to work two weeks and asking them to lay off two weeks. The reduced cost of living has worked to the advantage of men on reduced time.

The shorter working time was slow in spreading to the office worker, but it is now almost completely in force in all departments. The main object in reducing working time has been to furnish more jobs in all departments. In reality, it has allowed the companies to keep many men who would have been laid off under the old system. Closing of main offices all day Saturday has become a rule with some of the major oil companies.

Crude Runs to Stills, Motor Fuel Stocks, Gas, and Fuel Oil Stocks and Cracked Gasoline Production, Week Ended November 12, 1932

(Figures in barrels of 42 gallons each)

DISTRICT	Daily Refining Capacity of Plants			Crude Runs to Stills		MOTOR FUEL STOCKS					Gas and Fuel Oil Stocks	Daily Charging Capacity of Cracking Units			Cracked Production Daily Average
	Potential Rate	Reporting Total	Reporting %	Daily Average	% Operated	(a) At Refineries	(b) Bulk Terminals	(b) In Transit	(c) Other M.F. Stocks	Total Motor Fuel		Potential Rate	Reporting Total	Reporting %	
East Coast	644,700	638,700	99.1	471,000	73.7	3,787,000	6,751,000	1,148,000	321,000	12,007,000	9,679,000	344,400	326,400	94.8	92,000
Appalachian	144,700	137,500	95.0	90,000	65.5	986,000	355,000	58,000	216,000	1,615,000	792,000	59,100	57,600	97.5	26,000
Ind., Ill., Ky	434,900	424,000	97.5	263,000	62.0	2,798,000	2,975,000	96,000	175,000	6,044,000	4,116,000	341,400	328,200	96.1	79,000
Okla., Kans., Mo	459,300	405,800	88.4	199,000	49.0	2,783,000	746,000	.....	865,000	4,394,000	3,074,000	257,400	238,100	92.5	40,000
Inland Texas	315,300	219,700	69.7	97,000	44.2	1,097,000	99,000	.....	207,000	1,403,000	1,993,000	117,300	95,100	81.1	21,000
Texas Gulf	555,000	545,000	98.2	421,000	77.2	5,280,000	153,000	.....	214,000	5,647,000	9,741,000	506,500	495,500	97.8	85,000
Louisiana Gulf	146,000	142,000	97.3	87,000	61.3	1,093,000	98,000	.....	33,000	1,224,000	3,660,000	74,400	74,400	100.0	17,000
North La.,—Ark	89,300	84,500	94.6	47,000	55.6	123,000	21,000	5,000	54,000	203,000	539,000	29,500	25,500	86.4	13,000
Rocky Mountain	152,000	139,000	91.4	32,000	23.0	1,071,000	.....	.....	15,000	1,086,000	449,000	71,400	68,100	95.4	8,000
California	915,100	866,100	94.6	428,000	49.4	11,998,000	.....	.....	2,700,000	14,698,000	100,259,000	197,700	197,700	100.0	40,000
TOTALS WEEK: November 12, 1932	3,856,300	3,602,300	93.4	2,135,000	59.3	31,016,000	11,198,000	1,307,000	4,800,000	48,321,000	134,302,000	1,999,100	1,906,600	95.4	421,000
November 5, 1932	3,856,300	3,602,300	93.4	2,000,000	55.5	*31,402,000	11,536,000	1,061,000	4,800,000	*48,799,000	134,348,000	1,999,100	1,906,600	95.4	433,000
Below are set out estimates of Crude Runs to Stills and Motor Fuel Stocks on B. of M. Basis for Week Nov. 12, 1932 compared with certain Nov. 1931 Bureau figures.															
Estimate B. of M. basis Week Nov. 12, 1932				2,210,000	(d)	31,620,000	13,000,000		4,800,000	49,420,000					445,000
U. S. B. of M. November 1931 Figures:—					11/1	33,084,000	13,865,000		3,490,000	50,439,000					
November 1931 Daily Average Crude Runs				2,388,000	11/30	35,103,000	13,395,000		3,497,000	51,995,000	November 1931 Daily Average Cracked Prod				501,000

(a) Stocks at refineries, except in California district, which includes stocks of finished gasoline and engine distillate at refineries, at water terminals and at sales distributing stations and any amounts in transit thereto.
(b) By districts, East of California only. In California, bulk terminal and in transit stocks are included under "At Refineries" heading. See note (a)
(c) Estimated. Includes motor fuel in pipe lines and unblended natural gasoline at refineries and plants, also blended M. F. at plants.
(d) Estimated to permit comparison with A. P. I. Economics Report which is on Bureau of Mines basis.
*Revised in Oklahoma-Kansas District.

California Off Shore Shipments Above Expected

Los Angeles, Calif., Nov. 15.—California's offshore shipments have been holding up better than the average estimates of six months ago indicated. Loss of certain markets has been offset by a better demand from a few other districts. Some of the California marketers have been able to compete along the Atlantic seaboard with other districts. Japan is still taking a large amount of California products, and no definite sign of a switch to Russian oil is in evidence. It is known that the Japanese government has considered Russian oil for some time.

Little has been heard for some time concerning additional shipments of East Texas gasoline to the Pacific Northwest. The first cargo was unloaded under difficulties, and little money was made on the deal. Other shipments were expected, but they have not arrived. Maintenance of the correct relationship between Mid-Continent and California gasoline and crude prices should check any flow of gasoline or crude oil to California.

Comparison of Permits Granted for New Wells

	For week ending Nov. 19	Total this month	Total this year	Total this date last year	1931 year total
Arkansas	0	2	23	31	34
California	5	14	314	319	342
Louisiana	14	37	383	277	309
Kansas	10	41	381	390	475
Michigan	0	6	156	94	110
Oklahoma	39	105	883	719	842
Texas	160	414	6155	5844	6981
Total	228	619	8295	7674	9073

21 Claimants Lose Eastex 14 Acres

Austin, Texas, Nov. 16.—Judge J. D. Moore today entered judgment for the state for 14 acres of land known as Joe Lee Survey, Rusk County, about 12 miles from Henderson.

Judgment was entered subject to outstanding leases and retained for the public free school fund one sixteenth royalty in minerals. One well is being drilled on the tract at present. H. L. Hunt, trustee, and 21 others were losers.

Creek-Lincoln County Pool Allowed 13,794 Barrels

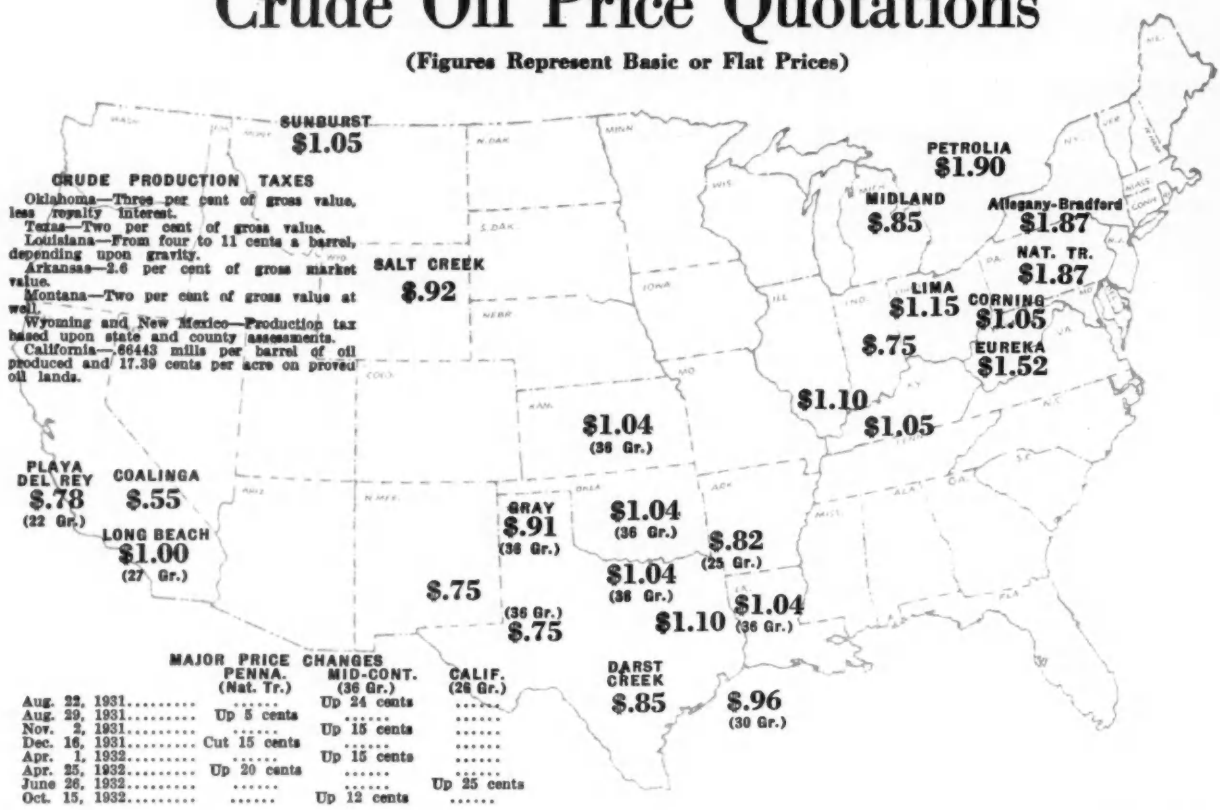
Chandler, Okla. — The Creek-Lincoln County Line pool, approximately three miles northeast of the town of Stroud has a pipe line allocation of 13,794 barrels for November, as shown in a statement by the proration umpire's office early in the week. Eight wells had a daily potential of 4264 barrels as of November 1.

Summarized Review of Week's Field Results

State—	Completions	Oil wells	Gas wells	Failures	Initial prod.
Arkansas	0	0	0	0	0
California	3	3	0	0	510
Illinois	0	0	0	0	0
Indiana	0	0	0	0	0
Kansas	10	5	1	4	1,399
Kentucky	11	7	0	4	270
Louisiana	5	2	0	3	1,625
Michigan	3	2	0	1	380
Mississippi	1	0	1	0	0
New Mexico	4	3	1	0	18,461
New York	0	0	0	0	0
Ohio	15	6	6	3	110
Oklahoma	30	21	2	7	10,397
Pennsylvania	3	1	2	0	3
Texas	181	145	3	33	904,181
West Virginia	5	1	2	2	10
Miscellaneous	0	0	0	0	0
Totals	271	196	18	57	

Crude Oil Price Quotations

(Figures Represent Basic or Flat Prices)



MAJOR PRICE CHANGES

	PENNA. (Nat. Tr.)	MID-CONT. (36 Gr.)	CALIF. (26 Gr.)
Aug. 22, 1931	.....	Up 24 cents	.....
Aug. 29, 1931	Up 5 cents	.....	.....
Nov. 2, 1931	.....	Up 15 cents	.....
Dec. 16, 1931	Cut 15 cents	.....	.....
Apr. 1, 1932	.....	Up 15 cents	.....
Apr. 25, 1932	Up 20 cents	.....	.....
June 26, 1932	.....	.....	Up 25 cents
Oct. 15, 1932	.....	Up 12 cents	.....

Official Postings and Differentials *(Revised to November 18, 1932)*

CALIFORNIA: (Effective June 26, 1932).

Signal Hill, Seal Beach, Alamitos Heights, Huntington Beach, Olinda-Brea Canon, Torrance, and Richfield: 14 to 19.9 gravity 65 cents; 20-20.9 gravity 69 cents; 21 gravity 74 cents; 22 gravity 79 cents; 23 gravity 84 cents; 24 gravity 89 cents; 25-25.9 gravity 93 cents, top posting for Torrance and Richfield; 26-26.9 gravity 97 cents, top price for Seal Beach, Alamitos Heights and Huntington Beach: 27-27.9 gravity $1.00; 28-28.9 gravity $1.03, the top price for Olinda Brea Canon; 29-29.9 gravity $1.06; and 30-30.9 gravity $1.09, the Signal Hill top posting.

Inglewood: 14 to 19.9 gravity 65 cents; 20-20.9 gravity 71 cents; 21 gravity 77 cents; 22 gravity 82 cents; 23 gravity 87 cents; 24-24.9 gravity 92 cents, the top price.

Playa Del Rey: 14 to 19.9 gravity 65 cents; 20-20.9 gravity 69 cents; 21 gravity 74 cents; 22 gravity 78 cents; 23 gravity 82 cents; 24 gravity 86 cents; 25 gravity 91 cents; 26-26.9 gravity 96 cents, the top price. Field gathering charges of 5 cents a barrel.

Athens, Rosecrans and Dominguez: 24-24.9 gravity 89 cents; 25-25.9 gravity 93 cents; 26 gravity 97 cents; and 27-27.9 gravity $1.00 with three cents additional for each degree gravity upward, ending at 32-32.9 gravity $1.15.

Elwood Terrace: 33-33.9 gravity $1.04 and 6 cents more for each additional degree of gravity, ending with 37-37.9 gravity $1.28, all prices f.o.b. ship.

Whittier and LaHabra: 14 to 19.9 gravity 65 cents; 20-20.9 gravity 68 cents; 21 gravity 72 cents; 22 gravity 77 cents; 23 gravity 83 cents; and 24-24.9 gravity 89 cents, the top price.

Montebello: 14 to 20.9 gravity 65 cents; 21-21.9 gravity 67 cents; 22 gravity 70 cents; 23 gravity 73 cents; 24 gravity 76 cents; 25-25.9 gravity 80 cents, the top price.

Coyote Hills: 14 to 20.9 gravity 65 cents; 21-21.9 gravity 66 cents; 22 gravity 70 cents; 23 gravity 76 cents; 24 gravity 81 cents; 25 gravity 86 cents; 26 gravity 90 cents; 27 gravity 94 cents; 28 gravity 98 cents; 29 gravity $1.02; and 30-30.9 gravity, $1.05, the top price.

Santa Fe Springs: 24-24.9 gravity 73 cents; 25 gravity 79 cents; 26 gravity 84 cents; 27 gravity 89 cents; and 28-28.9 gravity 94 cents, with 4-cent differential for each degree of gravity upward to 35-35.9 gravity $1.22.

Newhall, McKittrick and Kern River: 14 to 19.9 gravity 55 cents.

Midway-Sunset, Elk Hills and Buena Vista: 14 to 19.9 gravity 55 cents; 20-20.9 gravity 59 cents; 21 gravity 63 cents; 22 gravity 69 cents; 23 gravity 75 cents; 24 gravity 81 cents; 25-25.9 gravity 87 cents and 5-cent differential for each additional degree gravity ending with 30-30.9 gravity $1.12.

Lost Hills: Same as Midway-Sunset up through 25-25.9 gravity 87 cents, then 26-26.9 gravity 91 cents; 27 gravity 94 cents; 28 gravity 99 cents; 29 gravity $1.02; and ending 30-30.9 gravity $1.05.

Coalinga: 14 to 19.9 gravity 55 cents; 20-20.9 gravity 59 cents; 21 gravity 62 cents; 22 gravity 65 cents; 23 gravity 68 cents; 24 gravity 72 cents; and ending 25-25.9 gravity 75 cents.

Wheeler Ridge: 14 to 19.9 gravity 55 cents; 20-20.9 gravity 57 cents; and 21-21.9 gravity 60 cents, with 3 cents more for each additional degree of gravity, ending 25-25.9 gravity 72 cents.

Oklahoma, Kansas, North Texas: (Effective October 15, 1932). Below 28 gravity (Magnolia) 79 cents; below 29 gravity (others) 88 cents with differential of 2 cents for each degree to 40 gravity and above which is posted at $1.12.

North Texas: (Effective October 15, 1932). Below 28 gravity (Magnolia) 79 cents; below 29 gravity (others) 88 cents, with two-cent differential upward, ending 40 gravity and above, $1.12.

Texas Panhandle: (Effective October 15, 1932).

Gray County: Below 35 gravity: 87 cents, with differential of 2 cents for each degree to 40 gravity and above, 99 cents.

Carson and Hutchinson Counties: Below 35 gravity: 75 cents with differential of 2 cents for each degree to 40 gravity and above which is posted at 87 cents.

West Texas: (Effective October 15, 1932).

Crane-Upton, Crockett, Ector, Howard-Glasscock, Pecos and Winkler Counties, Texas and Lea County, New Mexico: 75 cents.

Southwest Texas: (Effective October 15, 1932).

Refugio Heavy: 80 cents.

Refugio Light: (Same as Gulf Coast—see below).

Gulf Coast: (Effective October 15, 1932).

Goose Creek, Hull, Liberty, Orange, Pierce Junction, Mykawa, Moss Bluff, Raccoon Bend, Barbers Hill, Sour Lake, Spindletop, Sugarland, West Columbia, Humble and Refugio Light: Below 25 gravity: 90 cents, with differential of 1 cent for each degree to 36 gravity which is $1.02 then 2 cent differential to 40 and above which is $1.10.

Mirando: 90 cents; **Salt Flat:** 85 cents; **Darst Creek:** 85 cents; **Pettus:** $1.00; **Markham:** Same as Gulf Coast.

Conroe, Texas: (Effective July 18, 1932).

Two-cent differential applies, beginning 35-35.9 gravity, 90 cents, ending 40 gravity and above, $1.

East Texas: (Effective October 15, 1932).

Flat Price: $1.10.

North Louisiana and Arkansas: (Effective October 15, 1932).

Caddo, Homer, Haynesville, Bull Bayou, Sabine, Cricton, DeSoto, El Dorado, Cotton Valley, Sarepta, Cartersville: Below 25 gravity 80 cents with differential of 2 cents for each degree beginning with 25 gravity and ending with 40 and above. Top price $1.12 a barrel.

Smackover: 75 cents.

Rocky Mountain States: (Effective June 1, 1932).

Salt Creek: Below 29 gravity 76 cents; 29-29.9 gravity 78 cents with differential of 2 cents each degree to 40 and above. Top price $1.00.

Elk Basin and Grass Creek: $1.10; **Big Muddy:** 98 cents; **Lance Creek:** $1.15; **Rock Creek:** 90 cents; **Sunburst:** $1.05; **Osage:** 98 cents; **Cat Creek:** $1.20; **Pondera:** 90 cents; **Hogback, New Mexico:** 80 cents.

Mid-Western States: (Effective April 11, 1932).

Lima: $1.15; **Indiana:** 75 cents; **Illinois:** $1.10; **Princeton:** $1.10; **Wooster:** $1.25; **Western Kentucky:** $1.05.

Pennsylvania: (Effective September 13, 1932).

Bradford District: $1.87; **National Transit Oil:** $1.87; **Southwest Pennsylvania Pipe Line Oil:** $1.57; **Eureka Pipe Line Oil:** $1.52; **Buckeye Pipe Line Oil:** $1.37; **Corning Crude:** $1.05.

Michigan: (Effective July 13, 1932), **Midland:** 85 cents a barrel. **Muskegon:** 76 cents to $1.00 a barrel.

Canada: (Effective Nov. 3, 1931).

Petrolia: $1.90; **Oil Springs:** $1.97.

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Sub-Surface Economies In Drilling

BRUCE BARKIS* and R. D. COPLEY†

WELL costs exceeding $250,000 are not uncommon for 8000-foot wells. All operators are endeavoring to reduce these costs, and this paper presents some of the means by which economies have been effected, and discusses the possibilities of improvement in drilling technique which will aid in further reducing expenditures.

Factors which have been considered because of their influence on the costs include: the proper selection of casing and drill pipe, size of hole, bit selection, attention to mud and weighting materials, cementing methods, straight hole practices, coring, formation testing, and various formation correlating practices.

Paper presented at Thirteenth Annual Meeting, American Petroleum Institute, at Houston, Texas, November 15, 1932.

DRILLING methods and surface equipment have been improved in recent years to meet the requirements of deeper drilling. Analyses of drilling costs during this period show that the various stages of development are reflected therein.

A direct comparison of the drilling costs of different organizations is not practicable, because of different accounting methods and reluctance on the part of most companies to release cost figures. Standardization of accounting methods, as suggested by the American Petroleum Institute, and the dissemination of actual cost figures would be of great assistance to studies of the most economical methods and equipment.

The trend toward refinements in drilling may have led in the past to needlessly increased costs, although progress has been made in the last two years toward elimination of practices wherein the cost could not be justified. A discussion of the various items included in sub-surface costs will develop possibilities for improvements in drilling practice, point out economies to be accomplished in the present methods, and tend to establish a balance between drilling practice refinements and drilling costs.

Casing

Frequently, the largest single item of expense in the drilling of wells is that of casing. It is possible to effect economies in this item by careful consideration of the following factors:

1. Quantity of casing.
   a. Use of less casing in the protection of the hole and producing zones to be cased off.
   b. Use of combination oil and water strings.
   c. Use of combination liners.
2. Size of casing.
   a. Improved drilling technique, permitting decreased clearances.
   b. Possible increased use of flush joint and/or welded casing.
   c. Wider use of under-reamers.
3. Combination of weights of casing.
4. Combination of grades of casing.
5. Standardization of casing sizes.

One of the requirements of the Division of Oil and Gas of the California State Mining Bureau for the protection of oil and gas measures is that casing shall be cemented just above the uppermost producing horizon. In many fields, where deeper zones have been developed, this requirement entails the cementing of casing above what may be a partially depleted zone. Such a protection is undoubtedly justified; but it may be accomplished by providing casing below this point so designed as to afford satisfactory protection by the use of mud and cement. This will often eliminate a string of casing, and also will permit an oil string of a larger diameter than otherwise possible.

Examples of the sealing effect of mud and cement have recently been noted in the Santa Fe Springs field in California, where many of the deeper zone wells have been plugged back and the casing perforated in the lower portion of the overlying Meyer zone. Where care has been exercised in perforating at the proper depths, clean wells have been obtained—despite the fact that there is an intermediate water above and a bottom water below this particular zone.

In another California field an operator has recently—in the process of abandonment—pulled water strings in which holes were found in the casing, although no water had been entering the well. Waters behind this casing had been prevented from migrating by the sealing action of the mud fluid.

Further dependence on the use of mud and cement as protective mediums would result in reducing the amount of casing required, and would also allow reduction in the number of strings which are used.

Multiple-stage cementing has been recently developed, and the use of this method as protection to several zones behind one string of casing is worthy of consideration. Cementing in this manner furnishes protection against migration of fluid behind the casing, and also aids in protection against casing collapse and/or corrosion. The development of such practice, permitting the elimination of a string of casing, would result in a saving of between $5000 and $25,000 per well.

Combination oil and water strings and liners have been much more widely used in the past few years. In many fields combination strings have been resorted to below the primary shut-off for the purpose of excluding low-head intermediate waters, the separation of high- and low-pressure oil and gas zones and, in the Kettleman Hills field in California, the separation of the upper gas gone from the lower black oil zone. The use of combination strings or

*Rio Grande Oil Co., Los Angeles, Calif.
†Standard Oil Co. of Calif., Los Angeles, Calif.

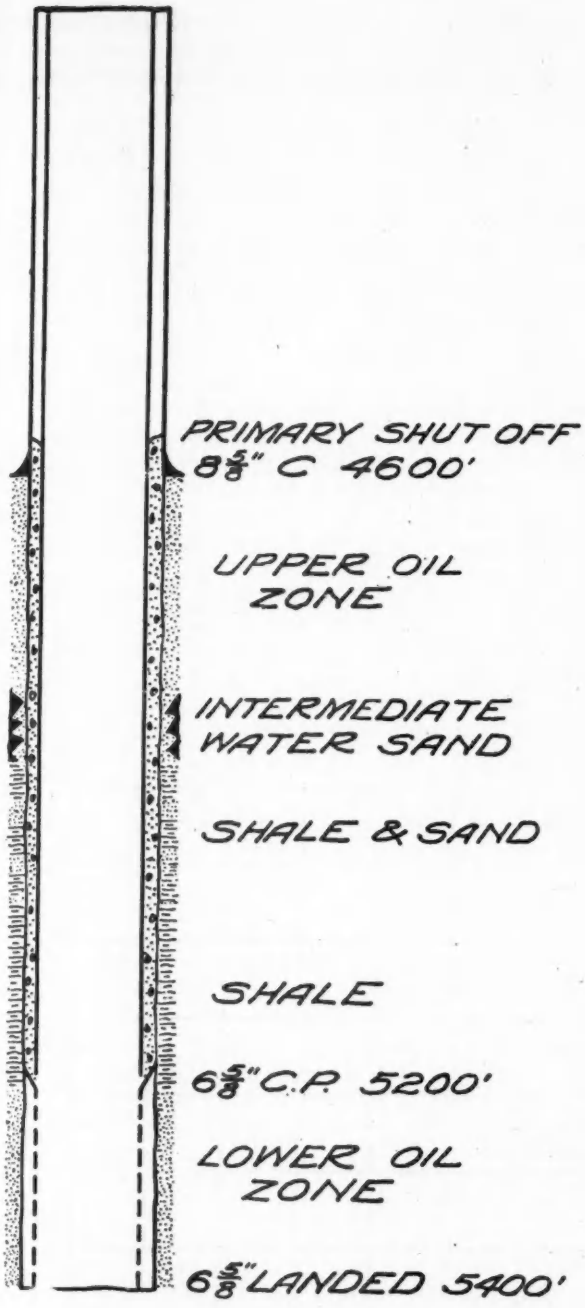


FIGURE 1
Use of Combination String to Exclude Low-Head Intermediate Water

liners in these cases is justified, and allows a much larger drainage area in the producing zone.

A typical combination string is shown in Figure 1, where a secondary shut-off has been made below an intermediate water, allowing perforated casing of the same size as the upper blank casing to be used opposite the lower producing horizon.

The device most generally used when cementing between the blank and the perforated casing is illustrated in Figure 2. The upper section serves as a float valve while running the string of casing, and during the cementing operation controls the placing of the cement behind the blank casing. The outer basket prevents the cement from settling around the perforated casing.

In several Los Angeles Basin fields in California development of deeper zones has been progressive, and it has been found that by the use of combination strings and liners the development program has been given more latitude. The principal advantage of this practice is in the reduced amount of the casing used. The liners are generally run into the well and landed on the bottom by means of drill pipe with an adapter and a special liner setter. The liner setter is then disconnected and cement placed around the upper blank section by one of several methods, using sufficient cement to fill the annular space between the top of the liner and the next largest string of casing. Liner hangers and packers are also used to effect a shut-off at the top of the blank liner.

Casing programs are normally designed after the required size of oil string has been decided upon. The size of the casing which is to be used above the oil zone is dependent upon both the clearance and the amount of open hole which is considered safe to carry. Since the development of straight hole practice—with sufficient reaming—most operators have found that there is much less danger of losing or freezing a string of casing. This largely eliminates the need for excessive clearances in the open hole, and permits the use of maximum lengths of casing in friction. The earlier practice of running protection or conductor strings is being discarded, and the amount of open hole carried is being increased. Recently it was found possible to drill to the Temblor zone in the Kettleman Hills field in California without cementing casing in the top of the brown shale zone. The estimated saving by this practice is $40,000 per well.

Flush-joint casing is being more extensively used, the principal advantage being the additional clearance which it permits. It is also expected that the use of welded casing joints will be much more extensive after improvement has been made or means for automatic welding have been developed.

The use of under-reamers in rotary drilled holes in the last three years has been practically discarded — it being contended that their use is hazardous. Manufacturers of under-reamers maintain that many of the former difficulties have been removed since the development of straight hole drilling. If a smaller hole can be drilled and the danger of

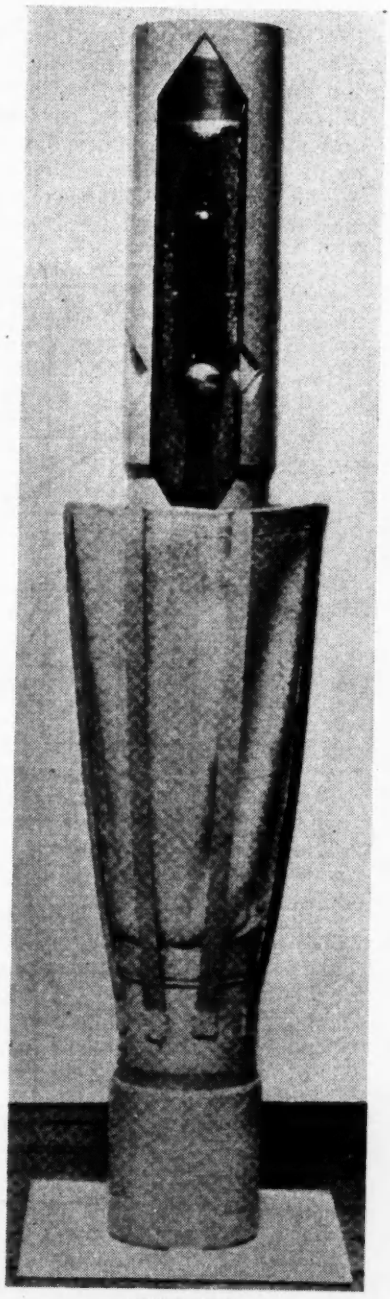


FIGURE 2
Device Used When Cementing Between the Blank and the Perforated Casing

freezing a string of casing can be minimized by under-reaming, the additional cost of this operation can be justified because of the economies effected in the items of bits and casing.

Until recently it was customary in most wells to use a full string of casing of the weight required to prevent collapse in the lower portion of the string. On long strings this is not necessary; and, by proper combinations of weights and grades, savings of from $1000 to $5000 per string can be made, while still maintaining the requisite factor of safety.

The standardization work which has been done in an attempt to reduce the present number of sizes and weights of casing should have the support of all operators, as the resultant reduction in casing stocks will accomplish savings to the consumer. The reduction will also aid in the aforementioned standardization of bit sizes, thereby effecting further economies.

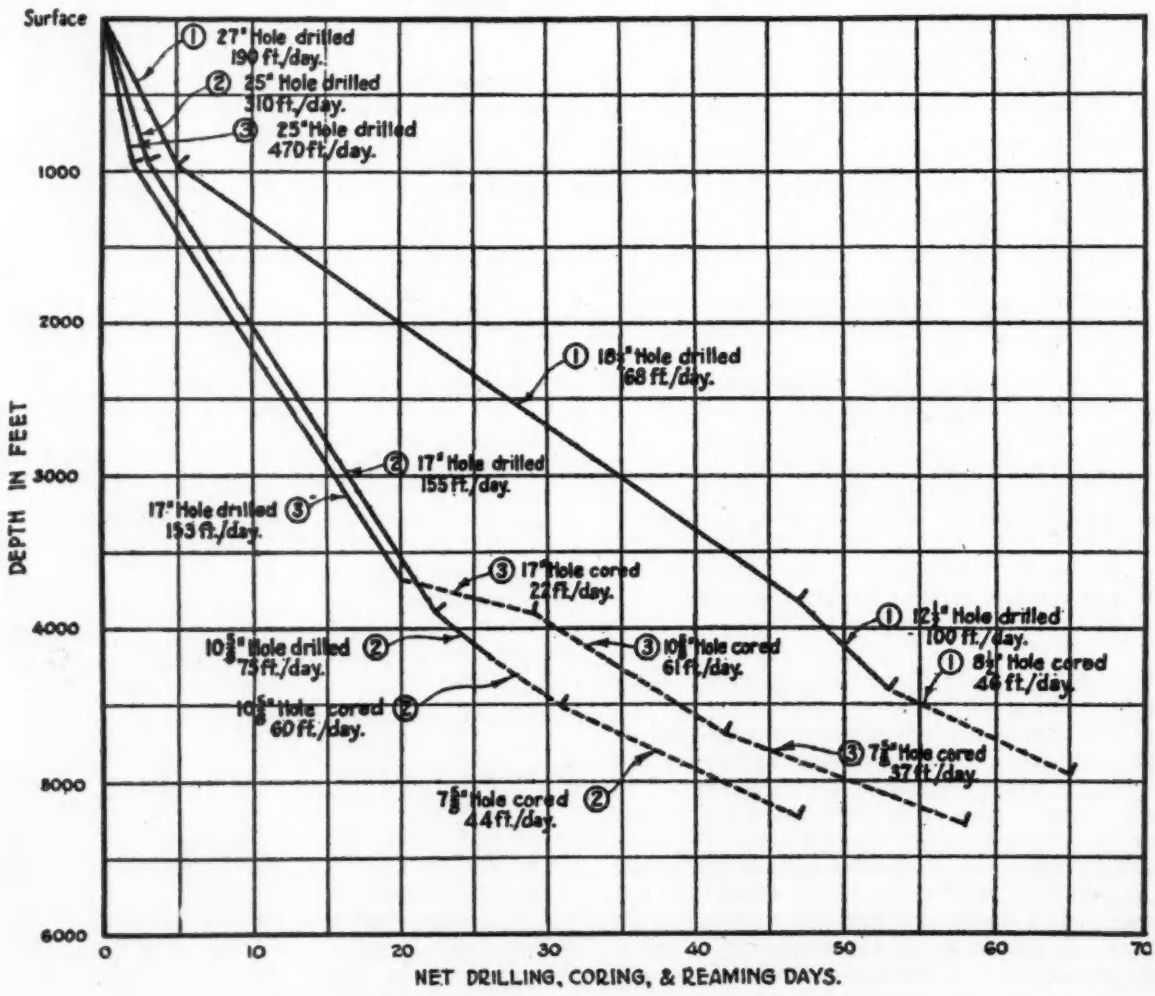
Drill Pipe

The amount of service or footage drilled with drill pipe has increased greatly in the past few years. The chief reason for this is the marked improvement in the quality and manufacture of the drill pipe. However, development of straight hole practices, attention to the speed of rotation, and proper design of the lower portion of the drilling string have also improved the situation by causing the removal of much of the severe service to which drill pipe was formerly subjected. The present practice of using heavy and longer drill collars, with reamers above or below, has taken much vibration from the lower portion of the string which is the point most subject to twist-off failures.

The present method of determining whether a string of drill pipe should be retired is dependent upon the number of failures. It is admitted that there are many difficulties in tracing the service which the drill pipe has given and also in keeping each string intact. It appears, however, that some means of direct inspection can be developed to decrease the possibilities of retiring drill pipe which is still in a usable condition.

It is the contention of one of the larger manufacturers of drill pipe that there is no excuse for failure in the threaded ends of drill pipe where they are made up properly in the couplings or tool joints. It is maintained that failure at these points is due to joints having been made up improperly. To correct this condition, it is recommended that all drill pipe be made up in a shop under the inspection of an experienced mechanic, rather than on the rig where close inspection is not so feasible.

It has been noted in recent deep drilling, where small strings of drill pipe have been used, that pump pressures have greatly increased. This condition is explained as partially due to the restriction of circulation in the small openings in the tool joints. The cutting action of fluids, due to the restriction of circulation at these points, has increased



DRILLING PROGRESS CURVES
FIELD A

FIGURE 3

Relationship Between Diameter of the Hole and Rate of Drilling

with higher pressures and velocities of the drilling fluids, and it will probably be necessary to re-design the tool joint and upset of the smaller strings of drill pipe so that the area of the opening may be increased. This should result in lowered pump pressures and increased life for the smaller sizes of drill pipe.

Size of Hole Drilled

The selection of the casing program, as mentioned before, is dependent upon the depth to the producing zone, the nature of the formation to be drilled through, the protection required for upper productive measures, the amount of clearance required, the amount of open hole or length of casing in friction, and the possibility of deepening to lower zones. The size of the hole drilled is normally determined by the size of the casing set, and the rate of drilling is often governed by the diameter of the hole drilled which, in turn, influences the quantity of material to be removed.

The drilling progress curves shown in Figure 3 illustrate the effect of diameters of holes on the rate of drilling. The three wells shown were drilled in the same locality in a California field. It will be of interest to know that wells No. 1 and No. 3 were drilled by the same crew, and that below the 4000 foot depth the variation in progress is explained by the efforts to control drift and in the several hardnesses of the formations encountered.

The comparison of progress made in the 25-inch and 27-inch holes and also in the 17-inch and 18½-inch holes indicates the savings in drilling time that can be made by using a casing program so planned that a smaller hole can be drilled.

The relationship of drilling days, daily progress, and amount of material removed is showed in Figure 4. The three wells under consideration were drilled in the same portion of the Kettleman Hills field in California, and progress to a depth of 5700 feet, or about the top of the brown shale zone, is shown for each. Wells No. 1 and No. 3 embraced a three-string casing program which allowed drilling of smaller diameter holes, and the more rapid progress in these wells, as compared to Well No. 2 embracing a four-string program, shows the effect of diameters and the quantity of material removed on the number of drilling days. It is apparent that the amount of material removed is a closer index of the actual work accomplished than the average daily footage.

In addition to the reduction of drilling days, where smaller diameter holes are drilled, other savings are in the casing cost, amount of cement used, the bit expense, and through the decreased service to which the drill pipe is subjected.

Drilling Bits

The amount of footage from drilling bits has increased greatly due to improvements in the hard-facing material and the technique in their application. This has increased the amount of time the bit may remain on the bottom, and has thus lowered the drilling costs. Blaine B. Westcott,[1] in a recent paper on "Hard Surfaced Rotary Bits," has pointed out that the application of hard facing to drilling bits is a comparatively new process, and it is to be expected that further development based on the experience of the last few years will attain improvements in the method of applying hard facings, in the heat treatment of the steel, and in the hard facing materials themselves.

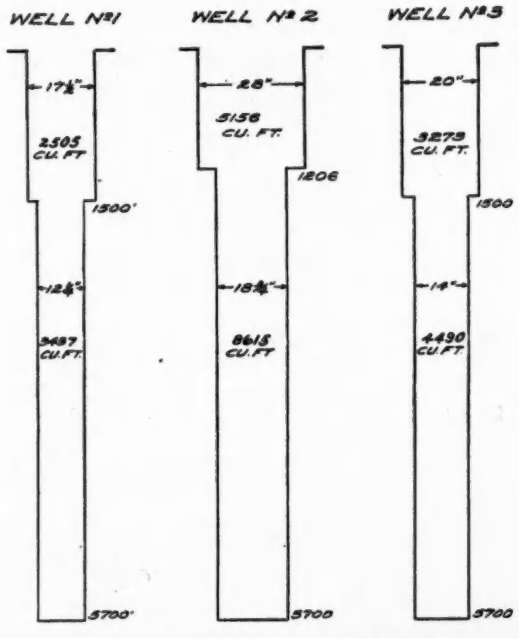
Several changes have been made in the design and types of drag or multiple-wing bits, in order to increase the amount of cutting surface; but it is probably in rock bits that the greatest improvement has been made. Changes in design have increased the cutting action in these types which, in turn, increased the drilling speeds over those formerly attained. Bits may be classified as smooth or rough-running, and study of drill pipe failures in connection with straight hole practice has shown that the type of bit has considerable effect on the service obtained from drill pipe.

A recently published article by Brad Mills[2] shows that during the past year 83 sizes of drilling bits were made and used in California and, in many cases, in size increments of ⅛ inch. It was concluded by Mills that a saving of 15 per cent could be made in bit costs, on the assumption that only 50 per cent of the sizes be eliminated. Such an economy is entirely possible, although, perhaps, the aforementioned standardization work on casing must be effected before bit reductions can be fully accomplished.

Rotary Mud and Weight Material

The work done in the last two years by the various drilling practice committees of the American Petroleum Institute in the study of rotary drilling mud and the effect of mud on producing horizons has been of benefit in directing the attention of operators to the importance of this subject. Further study is justified; and, since in one reported instance $125,000 was spent for rotary mud and weight material in one well, more attention is being given these expenditures.

Considerable progress has ben made in the reclamation of drilling mud, and concentration or flotation has been sug-



NET DRILLING DAYS	AVERAGE DAILY FOOTAGE	CU.FT. REMOVED DAILY
WELL Nº 1 17	335	350
WELL Nº 2 35	163	393
WELL Nº 3 19	300	408

FIGURE 4
Relationship Between Drilling Time, Footage, and Material Removed

gested as a means of economically reclaiming weight material. De-sanding equipment, which is usually of the vibrating-screen, settling, or centrifugal type, has often increased the life of rotary mud; and, in addition to reducing the wear on surface equipment, has decreased the internal wear on drill pipe.

Some progress has been made in drilling into high-pressure oil, gas or water sands by methods involving the application of external pressure to the drilling fluid. These methods of pressure control have not been used sufficiently

to establish comparative costs with the more generally used method of control by the use of weight materials added to the drilling fluids. It is claimed, however, that recent improvements in drilling heads and methods of handling casing and drill pipe under pressure control have eliminated many of the objectionable features of the external pressure method.

Cementing and Cementing Methods

One of the most important operations in drilling is to exclude successfully, from the producing horizon, water above the shoe of the water string, and it is not generally advisable to attempt to economize in such an important operation. It is possible, however, that economies can be effected on the surface string and on secondary shut-offs. When the results of cementing are uncertain, it is customary to drill larger holes and plan on the use of an extra string of casing in the event it is not possible to obtain a shut-off over the producing horizons on the first attempt. Another reason for such procedure is the possibility that trouble would be encountered in drilling, requiring the cementing of a protective string to hold up side-tracked drill pipe tools or troublesome formation.

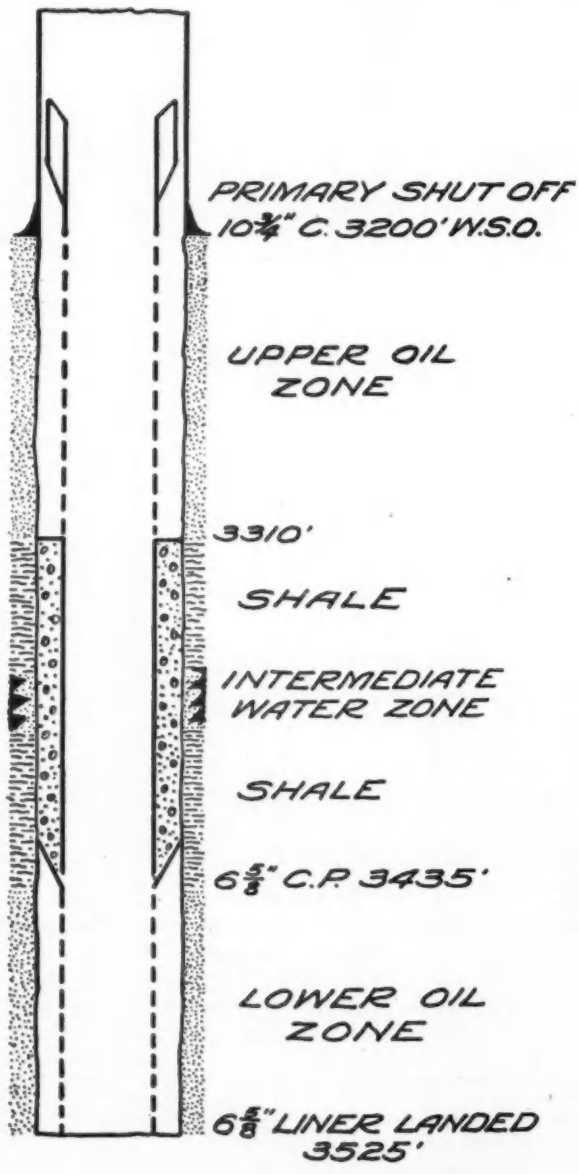


FIGURE 5
Use of Combination Liner to Exclude Intermediate Water in a Producing Zone

With the present satisfactory cementing methods and the improvement in drilling technique, the extra casing and larger hole appear to be a needless expenditure; and the casing program of a well could be safely designed without undue consideration of the possibility of a cementing failure and drilling difficulties.

The increase in successful cement jobs is due to the improvement in technique, such as care in measurements, conditioning of the hole and mud fluid, and improvements in mixing methods to give the proper slurry; while improvements in surface equipment have also speeded up the handling of casing and the placing of the cement. Where large amounts of cement are used in the cementing of upper and secondary strings, it has been found practical to use less expensive construction cement during the first part of the cementing operation and completing the operation with special oil well cement, which may or may not be treated with chemical to hasten the initial hardening.

It has been possible in several instances to produce from two zones in the same well—these zones being separated by an intermediate water. This has been accomplished by placing cement behind blank casing placed opposite the water zone, as shown in Figure 5, leaving perforated casing opposite the upper and lower oil sands. This method has been used principally after intermediate waters have encroached in a producing well and definite information has been obtained as to the location of the water sands by the use of one of several water-locating devices. The devices have been improved to make possible the location of points of water entry in open rotary-drilled hole, and it is believed that the production of many wells could be improved by such observations and later remedial measures.

Criticism of practices of shutting off intermediate waters is the difficulty of remedial work upon failure to exclude water in the first attempt. However, if re-cement jobs at the upper or lower ends of the blank section prove unsuccessful, plugging back of the well to the bottom of the upper zone is possible—thus permitting production to be obtained from the upper zone only.

Straight Hole Practice

In an effort to control the inclination of rotary drilled holes, one of the first limitations set was in the amount of weight the driller was allowed to carry on the bit. This control aided in obtaining straight holes, although it was found that the amount of weight which could be carried and still drill straight hole varied greatly with the type of formation. The control has now been confined mainly to the amount of inclination allowed, and the drilling rate has increased greatly. Devices for indicating the inclination are of many types, and have been so developed that the drilling crew is able to determine accurately the inclination as often as required—thus decreasing the possibility of plugging back and re-drilling.

Magnetic single-shot drift indicators, approximately determining the direction of drift, are being used, and have in many cases decreased the need for accurately oriented surveys. The information given by the magnetic devices is of great assistance in determining coring depths, in planning repair programs; and, in some cases, reaming costs have been lowered by knowing the changes of direction in the hole.

Although their use has not become general, some progress has also been made in the development of mechanical devices immediately to indicate to the driller that the in-

clination of the hole has increased above the established maximum.

Coring

Coring is used to establish marker horizons, cementing points for casing, and, often, the finishing depths of wells. Information obtained from cores is often useful in deciding on the type of perforation to be used in the oil string, and knowledge of the location of shale horizons is of benefit in laying out repair programs.

Coring presents several disadvantages. Generally, a marked increase in the number of round trips is necessary, with a corresponding reduction in the amount of time actually spent on the bottom. Good practice demands more reaming following coring than is necessary in a bit-drilled hole. In some formations core barrels of smaller diameter than the normally drilled hole size are found to give better recovery and are used—despite the added cost involved in the extra reaming. The time factor during coring assumes additional importance when oil sands are exposed to mud infiltration and to the scraping or sloughing of mud walls into the hole.

Another important disadvantage of coring, not often stressed, is the incompleteness and inaccuracy of the data derived. This is illustrated by failure to recover soft-textured oil sands, while full recovery of interbedded shales is effected; or, again, deceptive evidence as to the commercial possibilities of a well based on non-conclusive acetone and ether cuts. Cores do not give definite evidence of the presence of water in sands which may show an ether cut.

Economies in coring have been effected along several lines during the past few years. Recent tendencies lead toward closer supervision, and improvement in the core-cutting and removal operations will result in both greater recovery of core and lower costs. Much recent work has also been done toward improvements in core-head design and in the use of hard facing material, tending to increase the footage made with each head.

Future economies in coring costs may be developed through taking fewer cores. Increasing the length of core cut, the percentage of recovery per run, and the number of runs between dressings for each core head will effect further economies. However, close cooperation between geologists and engineers, who usually fix the coring program, and the drilling department is essential to take full advantage of these benefits.

Formation Tester

Due to the greater depth and to early difficulty in obtaining proper seats, the use of the formation tester in California has probably not been as extensive as in the Mid-Continent fields. Recently, however, there have been improvements in means of equalizing the pressures above and below the packer, and in releasing the packer, so that the hazard in the use of the equipment has been decreased and the formation tester has been much more extensively used.

Conclusive information as to the productiveness of sands penetrated or the presence of water has resulted in great savings in developing new horizons. Recently tests were made of sands at a depth below 9000 feet in a hole drilled through 4¾-inch casing. The results were negative, and the need for setting casing to test the productiveness of the sands was eliminated. This resulted in a most appreciable saving.

The number of satisfactory formation tests is increasing, due to improvements in technique. Of a series of 30 tests made in wells between depths of 2100 and 9250 feet, 23 were conclusive; while the remaining seven were failures, due principally to difficulties experienced with the formation seat and with the packer.

The Division of Oil and Gas of the California State Mining Bureau has recognized and accepted the method of testing the water shut-off with a formation tester. After the cement has been drilled out below the shoe of the water string, the formation tester is run with a packer, which is set in the shoe joint. Tests made in this manner have the effect of bailing the hole dry without placing any undue strain on the casing, and have been very satisfactory—indicating both successful and unsuccessful shut-offs. Results based on several tests made by one operator show that an average saving of 41 hours can be accomplished by the use of formation testers in determining water shut-offs. Considering the cost of coring, it seems reasonable to believe that the formation tester will be more extensively used in test wells to determine productive sands, and in proven areas to establish zones of richer production, as well as zones which may carry edge water.

Electrical Resistivity Methods

Considerable work has been done recently in developing the electrical resistivity method of determining formations; and, from experience, it has been found that the results obtained are of great benefit for correlation purposes upon the establishment of definite field markers. It is believed that, by the more extensive use of this equipment, coring costs may be reduced and production difficulties may be avoided by determining shut-off points and zones of intermediate water. Since this instrument is run in open rotary drilled hole, the formation information gained by the electrical resistivity methods, combined with the information on the productivity of a penetrated horizon as determined by the use of a formation tester, will allow of many economies which are not possible under our present methods.

Conclusion

It will undoubtedly be the impression of many that some of the methods pointed out in this article, which are now being used or which may be developed to decrease drilling costs, are not true advancements in drilling practices. It is true that some of the recent practices appear in a sense to be retrogressive, because they reduce the formerly practiced conservatism, and in some cases revert to earlier methods of drilling. However, in the present state of the oil industry the paramount consideration of all operators is the reduction of cost; and it is apparent that practices tending ultimately to reduce drilling costs are advancements, even though some of the former refinements and conservatism are discarded.

Acknowledgment

Acknowledgment is made of the helpful discussion of the subject matter of this paper by the members of the California Drilling Practice Committee and to Ben K. Stroud, National Tube Company, Los Angeles; Alexander Anderson, Fullerton, California; S. S. Parker, Doheny Stone Drill Company, Los Angeles; and J. R. Gignoux and R. A. March, Shell Oil Company, Los Angeles, for suggestions and data.

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Discussion of the Merits of

Tapered Flow Columns

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GAS OIL RATIO

1. *It has been claimed that tapered tubing reduces the gas-oil ratio at a naturally flowing well.*

That it is impossible to change the gas-oil ratio by this means has been submitted by the writer in a previous paper[1] It was argued in that paper that when a well is required to produce *steadily* at a pre-determined rate (less than its potential or maximum capacity) the gas-oil ratio will depend only upon the rate of production, and will be independent of the method of production and of the design of the equipment above the level of the producing sands in the well.

Reservoir Energy

2. *It has been claimed that tapered flow columns economize reservoir energy.*

At any period in the life of a well the bottom-hole pressure and temperature, together with the gas-oil ratio, are determined by the rate of production.[1] It follows that the energy accompanying each barrel of oil as it enters the well is determined by the rate of production; and, that so long as the well can be caused to produce steadily at the desired rate, the method of production and the design of the equipment in the well above the producing sand can have no influence upon the energy taken from the underground reservoir with each barrel of oil.

Velocity and Expansion

3. *It has been claimed that by designing an ideal column in such a manner that the velocity WOULD be constant with the desired type of expansion, that, therefore, constant velocity and the desired type of expansion ARE attained.*

The shape of the column cannot control the type of expansion. It is governed by the specific heat of the mixture, the latent heat of the vaporizing fractions, the imperfection of the gas, the acceleration due to gravity (g), and the depth of the well. In other words, the type of expansion depends upon the available heat and the work done in lifting the oil-gas mixture, rather than upon the shape of the column; and while it is true that if the intended type of expansion is attained the velocity will be constant, it may also happen that neither of these conditions is fulfilled.

4. *It has been claimed that enlarging the upper sections of the column will, by reducing the velocity, allow time for more heat to be absorbed by the expanding gas from the accompanying fluid and from the surrounding walls of the hole.*

At any continuously flowing well the intermingling of the oil and gas is so complete that they must always be at substantially the same temperature. Heat interchange with the surrounding earth will depend more upon mass velocity than volume velocity. In a well flowing at a given rate the weight of material passing through all sections of the flow column is constant and independent of the volume velocity, and the quantity of heat absorbed in a given section will depend more upon the number of pounds passing through that section than upon the number of cubic feet.

It is possible that the greater surface area of the walls of the tubing associated with the larger sections may facilitate the heat flow in some manner, but the magnitude of this effect is doubtful; in any case it appears probable that a temperature gradient will soon be established in the earth surrounding the hole, and that the heat flow will be of small importance except in very small wells.

5. *It has been argued in support of taper flow columns that a column of constant cross-section involves too great a variation in speed, and that this variation will entail too low a speed with excessive slip at the high-pressure end, and/or too high a speed with excessive friction at the low-pressure end; that there is a certain ideal speed, and that by means of increasing diameter the speed should be kept as close to this ideal as possible.*

Slip

It appears to have been overlooked that the density, as well as the velocity, of the gas varies with the pressure; and that the slip carrying power, or the rate at which a drop will

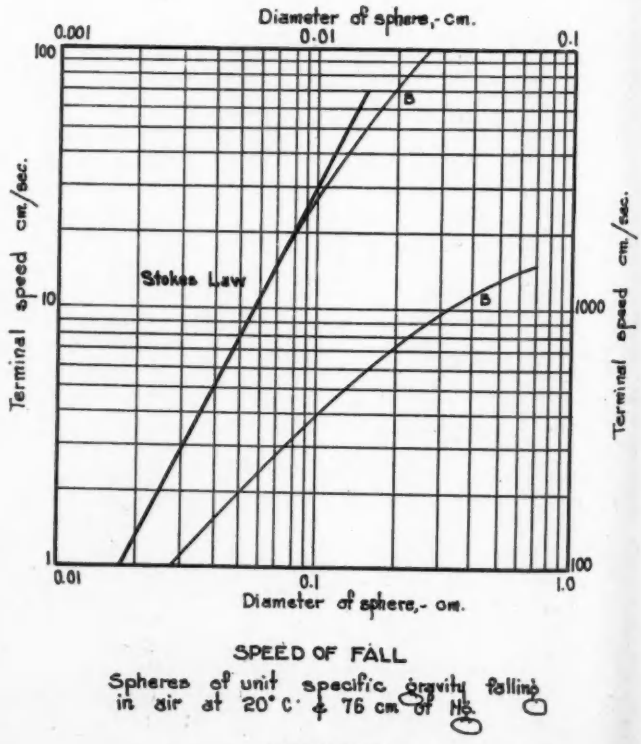


FIGURE 1

Reprinted from National Advisory Committee for Aeronautics—Technical Note No. 231.

THE most economical method of producing a well is by natural flow. Consequently, anything that will extend the natural flowing life is of great importance. During the past year much interest has been manifested in tapered flow columns, both from this point of view and as a method of improving the efficiency of gas-lift wells. The claims made for tapered columns have been based largely upon theoretical reasoning, and the published discussions on the subject contain little definite evidence from which comparisons with straight tubing can be made.

Given a high bottom-hole pressure and/or a high gas-oil ratio, there is little difficulty in making a well flow—and the design of the column is not critical. It is, therefore, at wells where the bottom-hole pressure and/or gas-oil ratio is low, and at gas-lift wells, that refinements in the design of the flow column are required. Under these conditions the volume of the gas in any section of the column is large compared with that of the fluid, and it is this type of flow that is dealt with in the present paper.

From the practical angle, apart from theory, the relative merits of tapered columns could be established by comparing the efficiencies (according to an agreed scale) of a large number of tapered columns with the efficiencies obtained with straight columns. Alternatively, columns of constant diameter, and tapered columns, could be run successively in the same well under similar conditions and the results compared.

It is the purpose of this paper to examine some of the theoretical arguments that have been adduced in support of tapered tubing practice, and to present the results obtained in a number of tests bearing on the subject. A few of the theoretical claims that have been expounded by those who advocate tapered flow columns are repeated in italics and discussed below.

This paper was presented at Thirteenth Annual Meeting, American Petroleum Institute, at Houston, November 17, 1932.

fall through the gas, depends upon the density and, consequently, upon the pressure. In order, therefore, to carry a drop of fluid at a constant speed from the bottom to the top of the flow column, it is not necessary to maintain a constant gas velocity, but actually the gas velocity must increase as the pressure and density fall.

The speeds at which spheres of various sizes and density fall through air at atmospheric pressure are known accurately, and are shown in Figure 1, reprinted from "Technical Note No. 231" of the National Advisory Committee for Aeronautics. This note also contains the results and a discussion of a number of experiments with amber and steel spheres falling through water, glycerine, etc. As the drag exerted by a gas upon a spherical or drop-shaped body moving through it is a function of the Reynolds number, and as the above-mentioned experiments cover Reynolds numbers of the right magnitudes, they can reasonably be applied to calculating the terminal velocity of drops of unit density falling in compressed air. Curve A, Figure 2, represents the velocities so calculated by the writer from the above-mentioned data.

Entrainment of drops of fluid in distillation equipment is a closely related phenomenon, and a number of works dealing with the design of such equipment contain discussions of the problem. Curve B, Figure 2, has been calculated from information from "Evaporating, Condensing, and Cooling Apparatus," by Hausbrand. Curves C and D, Figure 2, represent results obtained from experiments carried out by the writer, with a view to determining whether curves of the type of A and B can be applied to conditions in flow columns. A 20-foot joint of one-inch tubing was mounted vertically. A back-pressure valve and a small separator were connected to the upper end; and the lower end was connected, through a syphon, to a source of compressed air. Sufficient fluid to fill up one foot of the tubing was injected into the base, and the air throughput was slowly increased until fluid appeared in the separator at the top. The experiment was repeated at various back pressures up to 225 pounds per square inch. The small amount of fluid, compared with the length of the column, was intended to reproduce conditions met with in actual flowing wells with low submergence. Curve D portrays the results with salt water, and Curve C those with oil of a specific gravity of 0.86 and a viscosity of 50.5 at 100° F. Saybolt Universal.

It was a surprise to find that salt water was lifted with a lower gas velocity than that required for oil. In slope, the curves agree reasonably closely, and indicate a rapid reduction in slip with increasing pressure; and that as far as slip is concerned, the variation in velocity in a column of constant cross-section is to a large extent automatically compensated.

According to the tapered tubing theory that is under discussion, the ideal column should increase in diameter in the direction of flow, so that:

A. P. = a constant,
where P = the absolute pressure
and A = the cross-sectional area of column where P is taken.

The curves in Figure 3 indicate that a much smaller variation in diameter is required, and that the taper should be such that:

$$A\sqrt{P} = a \text{ constant}$$

There are a number of other compensating factors at work in an actual flow column. For instance, slip appears to decrease rapidly as the actual gas-oil ratio decreases. By actual gas-oil ratio we mean the ratio of the volume of the gas at the pressure existing at the point considered to the volume of the liquid. Again, the gas does not behave as a perfect gas—the density increasing more rapidly than the pressure,

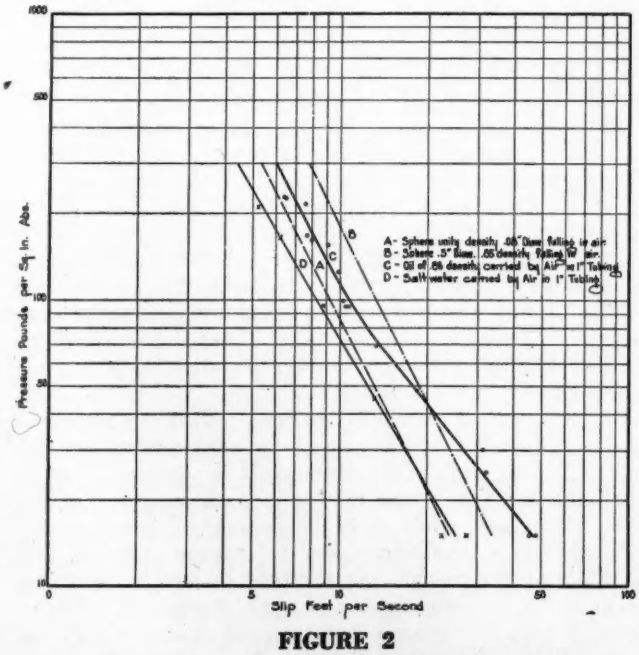


FIGURE 2
Curves Showing Relationship Between Slip and Gas Pressure.

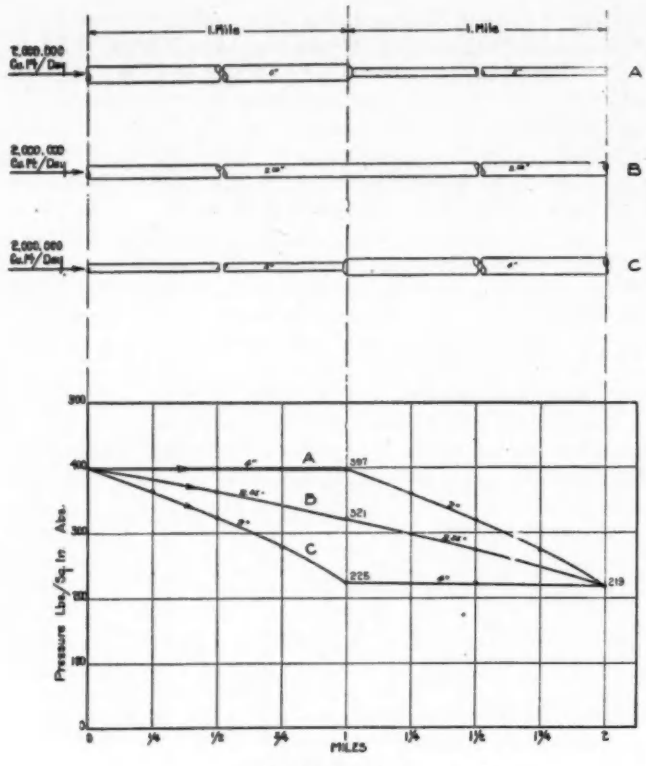


FIGURE 3
Calculated Pressure Drop in Tapered Lines and in Equivalent Line of One Diameter.

while the density of the oil decreases with the pressure. It is difficult to duplicate the conditions in an experiment and to determine how closely the total effect of the various factors compensates for the changing velocity in a column of constant section, but there are a few clues that indicate that compensation is almost complete. The similarity between the flow of a mixture of oil and gas in a column, and entrainment in a vessel, has been pointed out, and results obtained with an oil and gas separator may provide a clue. A 24-inch by 72-inch trap was set up at an East Texas well, a gas meter and back-pressure valve placed on the vent line, and a second gas meter on the stock-tank vent line. The trap was run at increasing rates at different back pressures until separation failed, i.e., until gas velocities were high enough to carry oil over into the vent line. It was found that although the oil production successfully handled increased with increasing back pressure, the amount of gas passing through the vent — when failure occurred—*was constant for all back pressures.* The greater oil rates were only achieved because at the higher pressures part of the gas remained in the liquid phase, passing out through the fluid valve with the oil. This result was unexpected, being contrary to the usual theory regarding oil and gas separators, viz., that back pressure increases the amount of gas that can be handled with proper separation. It indicates that under the conditions existing in a trap in East Texas the compensation for slip is nearly perfect, decreased velocities being counterbalanced by increased densities.

The slip speeds indicated by the tests with the one-inch column (see Figures 1 and 2) point to an unexpectedly large diameter for the drops. In explanation it is suggested that the actual slip speed in a flow column is much greater than that of a drop falling freely in a gas, because of the short free flight of a drop in a column due to frequent collisions with the walls of the column. In the type of well in which we are interested the submergence is small, the gas-oil ratio consequently high, and the gas volumes great compared with that of the oil—the mixture consisting of drops of fluid suspended in the gas. The writer believes that under these conditions the walls of the tubing are covered with a film of fluid, that the gas current raises ripples in this film, that the crests of these small waves are constantly torn off and carried upward in the form of drops, and that, owing to the small diameter of the column compared with its length, a drop does not travel far before colliding anew with the wall and being brought almost to rest. The drag or force exerted by the gas on a drop must, therefore, be of sufficient magnitude both to overcome the effective weight of the drop and to accelerate it repeatedly from comparative rest on the wall of the pipe up to the velocity attained just before collision. This shortening of the free flight probably explains the rapid decrease of efficiency with decreasing diameter of flow column—small compared with large-diameter tubing strings showing a greater increase in pressure drop than that expected from pipe line theory.

Friction

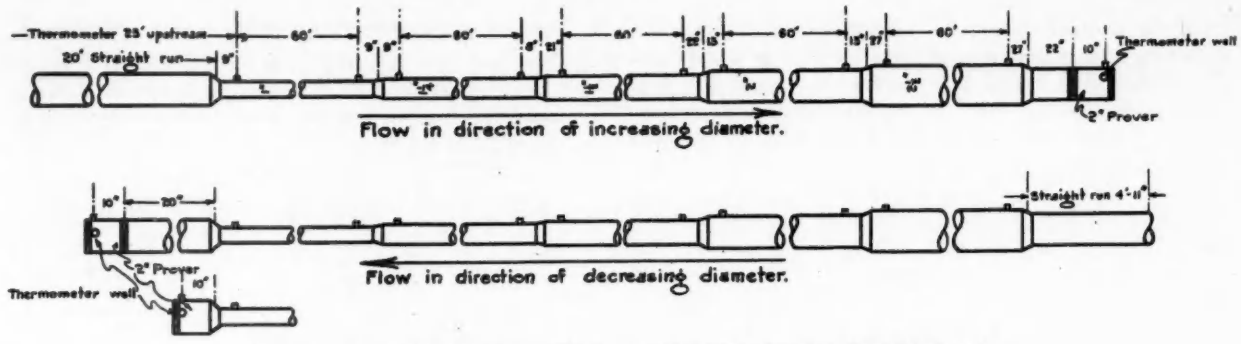
It is generally known that tapered oil lines have substantially the same capacity in both directions of flow. It is not so generally known that this applies to horizontal tapered gas lines also, and that both the capacity under a given differential and the pressure drop with a given throughput are similar whether the flow be in the direction of increasing or decreasing diameter. If the application of the Weymouth formula to the calculation of the pressure drop in a gas line composed of sections of several different diameters is examined, it will be seen that the solution involves addition, and that the sum is not altered by the order in which the terms are taken. Furthermore, a line of constant cross-section and of an intermediate diameter can always be found (by calculation) that is equal to any selected tapered line in length, capacity, and over-all frictional resistance. As an illustration, Figure 3 is included. The intermediate and the over-all pressure drops have been calculated for a taper line composed of one mile of two-inch and one mile of four-inch pipe for both directions of flow. The diameter of the equivalent line of constant cross-section has also been calculated, and is shown together with its pressure gradient. It will be noted that although the over-all pressure drops in all three lines are similar, the intermediate pressures differ. The pressure at the midpoint, for instance, is 225 pounds per square inch for the line of increasing diameter, 397 pounds per square inch for the line of decreasing diameter, and 321 pounds per square inch for the line of constant diameter.

These conclusions arrived at by calculation and implicit in pipe line formulas have been checked experimentally by the U. S. Bureau of Mines.[2] The experimental tapered line, together with the test results, are shown in Figure 4. The very small advantage in favor of flow in the direction of increasing diameter is attributed to Berwald and Johnson, the authors of the report, to the change of kinetic energy at the swedges, of which the line contained four in a total length of 300 feet. This effect would be negligible in any column with the length to taper ratio practicable in an oil well.

It is concluded as probable, therefore, that tapered flow columns will have no advantage as regards friction over a single-diameter column of the correct size, and that a large part of the velocity variation associated with constant-diameter columns is actually desirable from the point of view of slip.

6. *It has been claimed in connection with tapered tubing practice that the taper of the column governs the type of expansion, i. e., the exponent in the equation* $PV^n = a$ *constant; that* isothermal *expansion represents efficient, and adiabatic expansion inefficient operation.*

The writer submits that this argument is unsound; and that actually the greater the temperature drop in a flow column, the higher the efficiency of the column. It has to be remembered that the theorems expounded in the text books on



PLAN OF EXPERMENTAL PIPE LINE FOR STUDY OF GAS FLOW

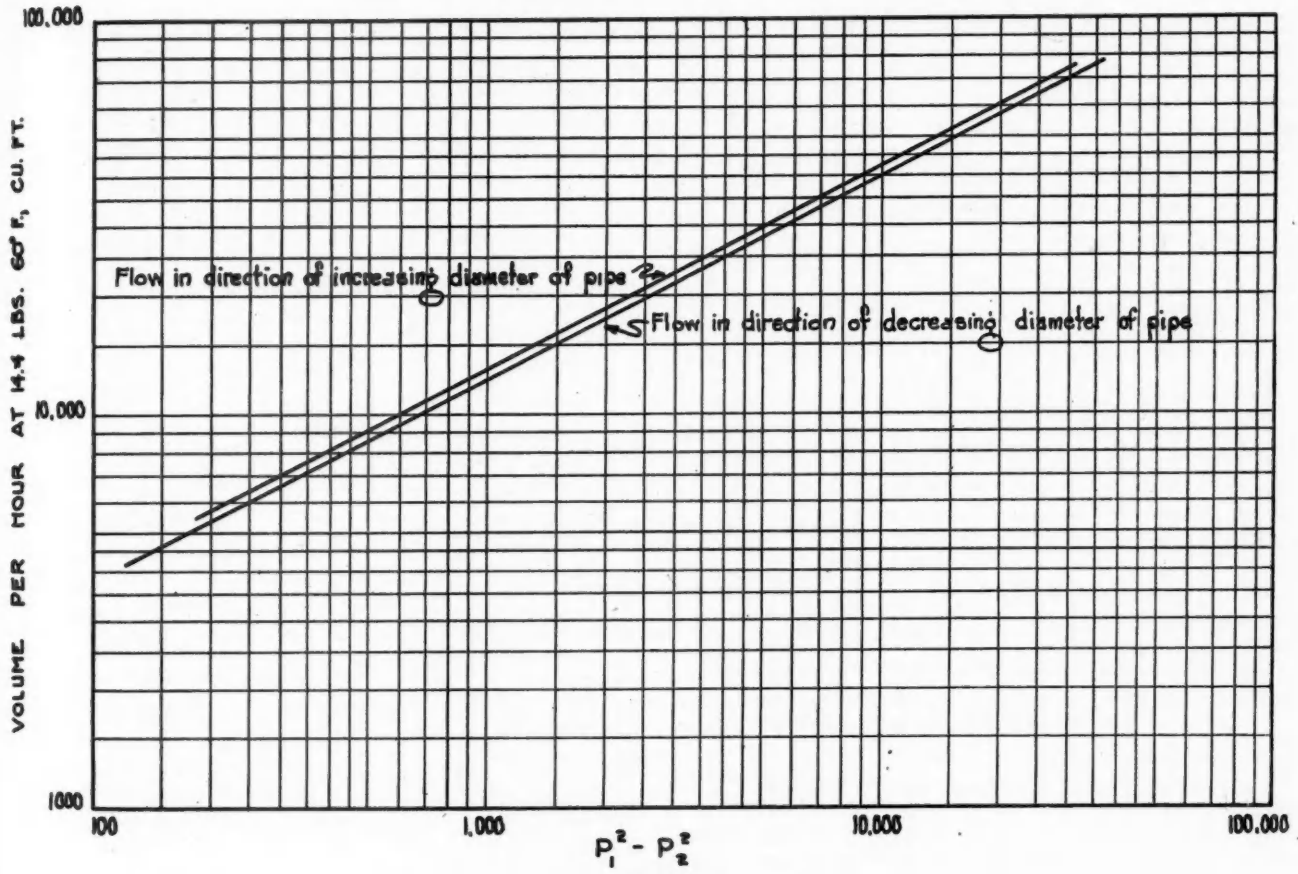


FIGURE 4

Flow Through Pipe Line Consisting of Several Different Diameters of Pipe. Reprinted from U. S. Bureau of Mines Reports of Investigations No. 3153.

thermodynamics refer to expansion taking place under frictionless pistons and without friction or eddies.

Anything remotely approaching *iso*thermal or adiabatic expansion, according to this meaning of these terms, is impossible in an oil well. Further, it is only when expansion takes place reversibly, and without friction or turbulence, that the area of the *PV* diagram bears any relationship to the useful work performed. In the type of expansion taking place in an oil well (and in a turbine, to give another example) the *smaller* the *PV* diagram, the *greater* the external work done and the higher the efficiency.

The fourth (Joule) of the gas laws states:

> The internal energy of a given quantity of gas depends only upon the temperature. When a perfect gas expands without doing external work and without taking in or giving out heat, its temperature does not change.
>
> External work done = change of internal energy plus heat supplied.

By way of illustration, suppose a perfect gas to expand through a turbine. If the rotar shaft is locked so that no work is done, the energy in the gas will be expended in overcoming friction which, in turn, will be re-converted into heat—the temperature of the gas, according to the fourth law, remaining unchanged. The *PV* diagram representing this process will be of maximum area, since there is no drop in temperature. Now suppose that the shaft is freed and the turbine allowed to perform external work: the temperature of the gas will decrease as it passes through the machine by an amount equal to the thermal equivalent of the external work done. The final temperature will, therefore, be lower and the *PV* diagram, consequently, *smaller* than in the first case.

Similar reasoning applies to the flow column. The oil and gas mixture enters the bottom of the column with a definite temperature and heat content. If the slip is 100 per cent and the work done by the gas lifting itself is neglected, the efficiency will be 0, no external work will be done, the temperature drop will be only that due to the imperfection of the gas, and the final temperature and, consequently, the area of the *PV* diagram will be a maximum. If, on the other hand, fluid is lifted, an equivalent amount of heat will be taken

from the mixture during its passage up the column, and the final temperature and area of the *PV* diagram will be reduced correspondingly.

According to the usual tapered-tubing theory, the perfect column is one whose section constantly enlarges as expansion proceeds, so that:

$$PA = \text{a constant}$$

Such a column is impractical, and a compromise has to be made. Now, if there is any real basis for the claims made for tapered tubing, the performance of a flow column should depend upon its approach to the ideal; and columns whose relative departures from the ideal differ widely should display correspondingly wide and easily detected differences in performance.

It is only by experiments at actual wells and/or by statistical comparison of the results obtained with columns of various tapers and columns of constant diameters that the question whether there is any advantage in favor of the tapered column, and the correct taper, can be decided.

A few comparative figures have been gathered together in Figure 5. Efficiencies have been calculated by dividing the work done in lifting the oil by the work that could be obtained from the quantity of gas as measured at the surface if it expanded *iso*thermally from the bottom-hole pressure to the pressure at the top of the flow column. This standard has been used because it is customary—none better having been introduced up to the present time. It must be kept in mind that it neglects to take account of the work done in lifting the gas which may exceed that done in lifting the oil; and that while *iso*thermal expansion may be useful as a comparison, the doctrine associated with it cannot be applied to flow column conditions. In the wells selected for the tests various flow columns were operated under conditions as nearly uniform as possible. Columns of constant cross-section were compared with taper columns, and comparisons were made between tapered columns run in the usual manner with the large end upward and the same column reversed, i.e., with the large end down.

Referring to Figure 5, in Cotcha well No. 1-A, it will be seen that the efficiencies with tapered columns were no higher than those with columns of one diameter; and, further, that it did not appear to make any difference which way up the combination three-inch and four-inch tapered column was run.

Test No. 5 is included as an example of what can be done with a small straight column, the well having flowed under these conditions for several months. Shaw[3] has pointed out that the efficiency that may be expected with a flow column is proportional to the submergence, and the comparatively high efficiency in this test may be partly accounted for by the high bottom-hole pressure compared with the depth. At the same time, submergence can only account for a part of the difference between tests No. 5 and No. 7; and, taken together, they illustrate the large and inexplicable divergence in results obtained at different wells, although conditions may appear closely similar.

Tests No. 6 and No. 7 cover a tapered and an equivalent straight column working under similar conditions. At first sight they appear to point to a superiority for the tapered column, but this may be due to the slightly greater depth to which the straight column was run—later results indicating a rapid decrease of efficiency at this well when the bottom of the tubing projected into the shot hole.

Tests No. 8 and No. 9 cover a tapered column with the large end up and the same column reversed, and show a higher efficiency for the reversed column. Test No. 10 contradicts this finding, but the column was 10 feet shorter, which, as previously mentioned, tends to raise the efficiency at this well.

Although no comparison between any two of the tests covered in Figure 5 can be accepted too literally, it is believed that, considered collectively, they do indicate that under the well conditions covered there is no marked advantage associated

Test Nº	WELL	COLUMN	PRODUCTION Barrels per Day			Gas-Fluid Ratio Cu.Ft./Bbl.	Pressure at Bottom of Column Lbs./Sq.In. Gauge	Back Pressure at Top of Column Lbs./Sq.In. Gauge	Percent Efficiency
			Oil	Water	Total				
1	Cotcha-Nº 1A Seminole Dist. Natural Flow	6⅝" x 3150' CASING	70		70	12,000	12*	ATM	6%
2	"	3" x 3135' TUBING	55		55	7,000	38*	ATM.	4.7%
3	"	4" x 971' / 3" x 2164' TOTAL 3135'	52		52	9,000	33*	ATM.	4.1%
4	"	3" 2162' / 4" 971' TOTAL 3133'	50		50	8500	33*	ATM.	4.3%
5	Hart-Nº 2 Natural Flow	¾" x 1320' TUBING	7		7	1500	132*	10*	6.1%
6	Sec.4-21-10 Nº 3 Gas Lift	1¼" x 353' / 1" x 434' / ¾" x 424' TOTAL 1203'	50%	50%	3.27	10.000	79*	2*	1.0%
7	"	1" x 1218'	50%	50%	3.35	13.500	76*	2*	0.76%
8	"	1" x 369' / 1½" x 365' / 2" x 335' TOTAL 1181'	50%	50%	5.05	9,000	66*	2*	1.0%
9	"	2" x 239' / 1½" x 583' / 1" x 364' TOTAL 1181'	50%	50%	3.75	13.400	84*	2*	.7%
10	"	2" x 229' / 1½" x 383' / 1" x 569' TOTAL 1181'	50%	50%	5.64	7700	78*	2*	1.25%

FIGURE 5

with tapered columns; and, further, that even such contrasting columns as those obtained by reversing a tapered string fail to evince any marked difference in performance.

Considered as machines for lifting fluid, tapered columns should exhibit definite superiority if they are to be worthwhile; because, apart from lifting efficiency, they possess certain operating disadvantages. The assembly of the correct lengths of the several sizes of tubing, the swedges, elevators, tongs, etc., require time and care; but the main drawback associated with tapered columns is that they cannot be swabbed to start the well. On the other hand, in very deep wells the question of strength may make a tapered column desirable for the same reason that tapered sucker-rod strings are used.

Conclusion

It is concluded that:

1. Part of the theory at least upon which the superiority of tapered tubing has been predicated is open to attack.

2. The variation in velocity associated with columns of constant diameter does not necessarily lead to excessive slip and friction; but a considerable increase in velocity as expansion proceeds is, in fact, desirable.

3. Comparative tests performed with different flow columns failed, under the limited range of conditions covered, to detect any superiority for the tapered columns.

Acknowledgments

The writer wishes to acknowledge assistance rendered by H. W. Manley and Homer Echols, who carried out the tests with the several columns at the wells and reported on them. Acknowledgment is also made of assistance rendered by W. K. Whiteford, at whose instigation the paper was undertaken, and without whose constant support and encouragement it could not have been completed.

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Drilling Practices and Economies In the Oklahoma City Field

K. A. COVELL and C. P. PARSONS

ABSTRACT

REDUCED coring time, improved practices, the use of thinner drilling mud, and better knowledge of the formations to be encountered have resulted in a decrease of 60 per cent in drilling time and in improved straightness of holes in the Oklahoma City Field. Cementing and casing programs are described; close inspecting of used casing has reduced costs and an analysis of bit and casing sizes has resulted in a reduction in the number of bits; finally, the treatment of boiler water has resulted in less down-time on boilers.

This paper constitutes the report, delivered at the Houston meeting of the American Petroleum Institute of the Mid-Continent District Sub-Committee on Drilling Practice. Members: C. P. Parsons, chairman; K. A. Covell, Pure Oil Company, Chicago; J. T. Hayward, Barnsdall Oil Company, Tulsa; D. L. Trax, Gypsy Oil Company, Tulsa; and W. K. Whiteford, Barnsdall Oil Company, Tulsa.

Mr. Covell is petroleum engineer, Pure Oil Company (formerly chief petroleum engineer, Indian Territory Illuminating Oil Company), and Mr. Parsons is field engineer, Halliburton Oil Well Cementing Company, Duncan, Oklahoma.

DURING the year 1932 numerous improvements and economies have been effected in drilling practice in the Oklahoma City field. The discovery well was completed on December 4, 1928 and since that time there have been a total of 1142 drilling operations, as detailed in Table 1.

TABLE 1

Status of Drilling Operations in the Oklahoma City Field, As of October 15, 1932.

Status	No. Wells
Completed Oil Wells	909
Completed Gas Wells	41
Drilling Wells	23
Uncompleted Wells Shutdown	134
Wells Started	7
Wells Abandoned	28
Total	1142

Drilling Time

In comparing drilling developments in 1932 to those of previous years, the decrease in time required to complete 6500-foot wells is most interesting. The discovery well was drilled in a total of 150 days. As shown in Figure 1, the average drilling time of 25 wells completed in 1929 was 119 days whereas only 50½ days were required for nine wells completed in 1932.

A natural factor in the reduction of drilling time has resulted from the elimination of extensive coring required in drilling the earlier wells. It is also believed that the correlation of rotational speeds, sizes and types of drilling bits, weights on drilling bits, mud weights and velocity, and the use of long, stiff drill collars, have resulted in faster drilling and straighter holes. Other influences are discussed hereinafter.

Drilling Fluids

Due to the tendency of a thick, heavy mud to become gas-cut while drilling into the producing formations, most operators have adopted thin light fluids weighing 9 to 10 pounds per gallon, and their use is believed to have been influential in decreasing the drilling time of recent wells. The use of thin, light mud has been possible in drilling recent wells into the Wilcox sand, because these wells do not present the same danger of blow-outs as do wells in other parts of the field, the upper gas sands over the Wilcox formation being structurally low and generally carrying fluid instead of gas. However, just prior to running casing the drilling fluid is usually thickened with an admixture to better the condition of the hole for running casing.

It is believed, because of the lower percentage of abrasive solids carried in the light mud, that longer service and less shut-down time occurs with slush pumps when light drilling mud is used as compared with the use of thick, heavy mud, weighing 11 pounds or more.

One operator has used a specially refined oil of 27 degrees A.P.I. gravity as a circulating medium while drilling into the producing formation in two wells. The operator feels that results of both of these completions were very satisfactory, it being claimed that the oil sand is left in better producing condition by this method than if the sand were drilled with mud or water. Only a small portion of this special oil was lost during the drilling operations, and the same batch was also used in killing two wells.

Straight Holes

Perhaps the most significant indication of improved practice is that wells completed in 50½ days during the comparative drilling calm of 1932 are more nearly vertical than those completed in 120 days during the heated rush of previous years. While more care is exercised generally at the present time, it is claimed by some contractors that straighter holes are obtained by drilling with a 12¼-inch bit and then reaming out to 19 or 20 inches before running and cementing 16-inch O.D. surface pipe.

Records of vertical tests for more than 300 wells show an average correction for vertical depth at 6450 feet of only 8.8 feet per well. This correction corresponds to an average deviation from vertical of 3 degrees and a possible maximum horizontal departure of 344 feet at the bottom of the hole. Table 2 shows the average deviation from

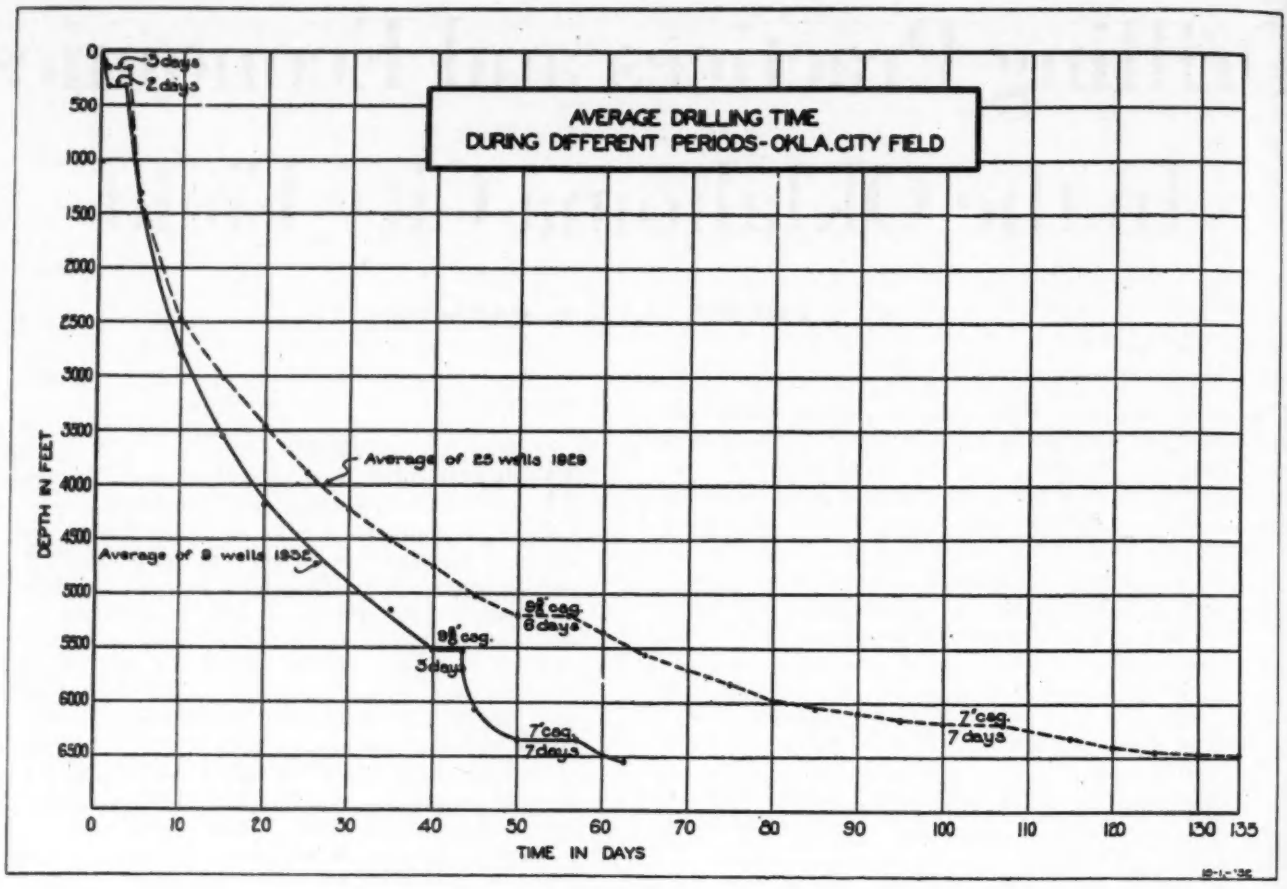


FIG. 1

vertical at 500 feet depth intervals of 11 recently completed wells.

TABLE 2
Deviation From Vertical of Oklahoma City Wells

Depth In Feet	Degrees from Vertical	Depth In Feet	Degrees from Vertical
500	1.5	3500	1.1
1000	2.7	4000	2.5
1500	2.7	4500	1.9
2000	2.6	5000	1.8
2500	2.4	5500	1.1
3000	1.8	6000	2.1
Average			2.0

Boilers: Water, Fuel and Repairs

The use of treated boiler water has resulted in decreased shut-down time for boiler repairs. Soda ash continues to be used as a softener and the necessity for this treatment varies with hardness of the river water which supplies the field for drilling purposes. The percentage of injurious salts in the water is higher at low stages than at high stages of the river.

When a large number of wells was being drilled during the spring and summer of 1930, the water became low in the North Canadian river and the operators tested various types of condensers with the view of conserving water. The results of some of these tests, based on 1500 barrels a day water requirement per well, are shown in Table 3. Due to the favorable results of these tests most of the drilling wells now use condenser units, which are generally connected to the exhaust from the drilling engine. In addition to saving water the condensers increase the temperature and reduce the hardness of the boiler feed water, thereby resulting in added overload capacity.

Figure 2 shows that an average of 75,000 barrels of water and 37,000,000 cubic feet of gas are required to drill a well to 6500 feet during 1932. These figures are based on a rotary equipped with four 125 horsepower boilers, and include make-up water required for drilling fluids.

Total gas requirements per well have been as high as 55,000,000 cubic feet and as low as 24,000,000 cubic feet, depending upon the type of equipment used, weather conditions, frequency of boiler blow-offs and drilling time.

Cementing Practice

In a number of cases, 3000 sacks of cement have been used on strings of 13⅜-inch and 9-inch casing, but one of the largest amounts of cement ever placed behind a string of casing in the Oklahoma City field was the cementing, in 1932, of 2017 feet of 13⅜-inch casing with 3575 sacks of cement. An interesting consideration is that such a large amount of cement would normally fill 6075 linear feet of annular space between a smooth 17¼-inch hole and 13⅜-inch casing, yet it was placed behind 2017 feet of 13⅜-inch casing in a well in which 20-inch casing was set 16 days previously. This condition can be attributed to considerable

TABLE 3
Comparison of Condenser Performance

Type Unit	Estimated Cost Installed	Bbls. Per Day Condensed	Per Cent of Total Water Condensed
Closed Coil	$ 650.00	150	10
Simple Exchanger (home made)	1000.00	225	15
Air Cooled 6′ Diam.	2700.00	375	25
Two Air Cooled 6′ Diam.	2700.00	570	38
Air Cooled 8′ Diam.	2600.00	630	42

irregularities in the hole, resulting from the increased hydraulicking effect of thin mud as compared with thick.

One Oklahoma City operator reports after using thin mud on a number of wells and using 3000 sacks of cement approximately 2000 feet of 13⅜-inch casing from top to bottom, that he has recently used heavy mud in drilling the big hole and the quantity of cement was reduced to 2500 sacks. Assuming this difference of 500 sacks as being due to the use of thick mud, the difference is not sufficient to account for the excessive annular space between 2000 feet of 13⅜-inch O.D. casing and a hole made by a 17¼-inch bit. Whereas 3000 sacks is sufficient to normally fill 5100 linear feet of the annular space, 2500 sacks would normally fill 4250 feet. The upper 2000 feet of formation are lower Permian containing considerable sandy clay shales and loosely bonded sands.

Another interesting development of 1932 was the cementing of 6490 feet of nine-inch casing with 3000 sacks in a total elapsed time of 58 minutes. The cement was mixed in 35 minutes by two cementing outfits, one of which was designed especially for rapid handling of such large amounts of cement.

TABLE 4

Depth From	Depth To	Drill Pipe Size O.D. Inches	Drill Pipe Wt. Pet Ft. in Lbs.	Number of Lines Thru Traveling Block
0	4500	6⅝"	25.2	6
4500 to 9⅝" Casg. Point:		6⅝"	25.2	8
Running 9⅝" Casing		....	....	8
9⅝" Csg. 7" Csg. Point		4½"	16.6	6
Running 7" Casing		....	....	8
7" Casing Point-Total Depth		3½"	13.3	6

TABLE 5

Program	Size OD, Inches	Wt. Per Foot, Lbs.	A. P. I. Grade	Nominal I. D., Inches	Diam. of A.P.I. Drift, Inches	Size of Bit Used Inside Csg., Inches	O.D. of Couplings, Inches	Depth Casing Set, Feet	No. of Sacks of Cement
A	20	90	C	19.190	.....	17.250	21.563	250	400
	13⅜	61	C	12.515	12.359	12.250	14.375	2050	2500-3000
	9⅝	40	D	8.835	8.679	8.625	10.625	6400	2000-3000
B	16	70	C	15.198	.....	12.250	17.000	300	500
	9⅝	40	D	8.835	8.679	8.625	10.625	5700	1500
	7	24	D	6.336	6.211	6.125	7.656	6400	500
C	16	70	C	15.198	.....	12.000	17.000	300	300
	9	40	C	8.150	7.994	8.125	10.010	5700	2000
	6⅝	26	C	5.855	5.730	5.625	7.390	6400	600

NOTE: The 20-inch surface pipe shown on the program A is run in a 24-inch hole, whereas the 16-inch O. D. surface pipe in the programs B and C is run in a 19-inch hole.

Drill Pipe and Casing Programs and Practices

Wells in the Oklahoma City field have been completed with casing of 9⅝, 9, 8⅝, 7, 6⅝, 5, or 4¾-inch O.D. set on top of the producing formation.

Table 4 shows the general practice with regard to drill pipe sizes and number of lines through traveling block.

Table 5 shows the principal casing and cementing programs now used in the field.

Program A obviously is the most expensive, but the large hole offers considerable advantage in workovers and in deepening. B is cheaper than A but more expensive than C, due to the higher cost of grade D casing. Although B and C have two different sizes the grade D metal in B makes the collapsing strength safety factor practically the same as the smaller size casing in C. Program B, however, offers advantage of larger hole and better clearances than C.

Gaging Used Casing

Several strings of seven-inch O. D. 24-pound Grade D casing were pulled from 6500-foot wells in which the casing was

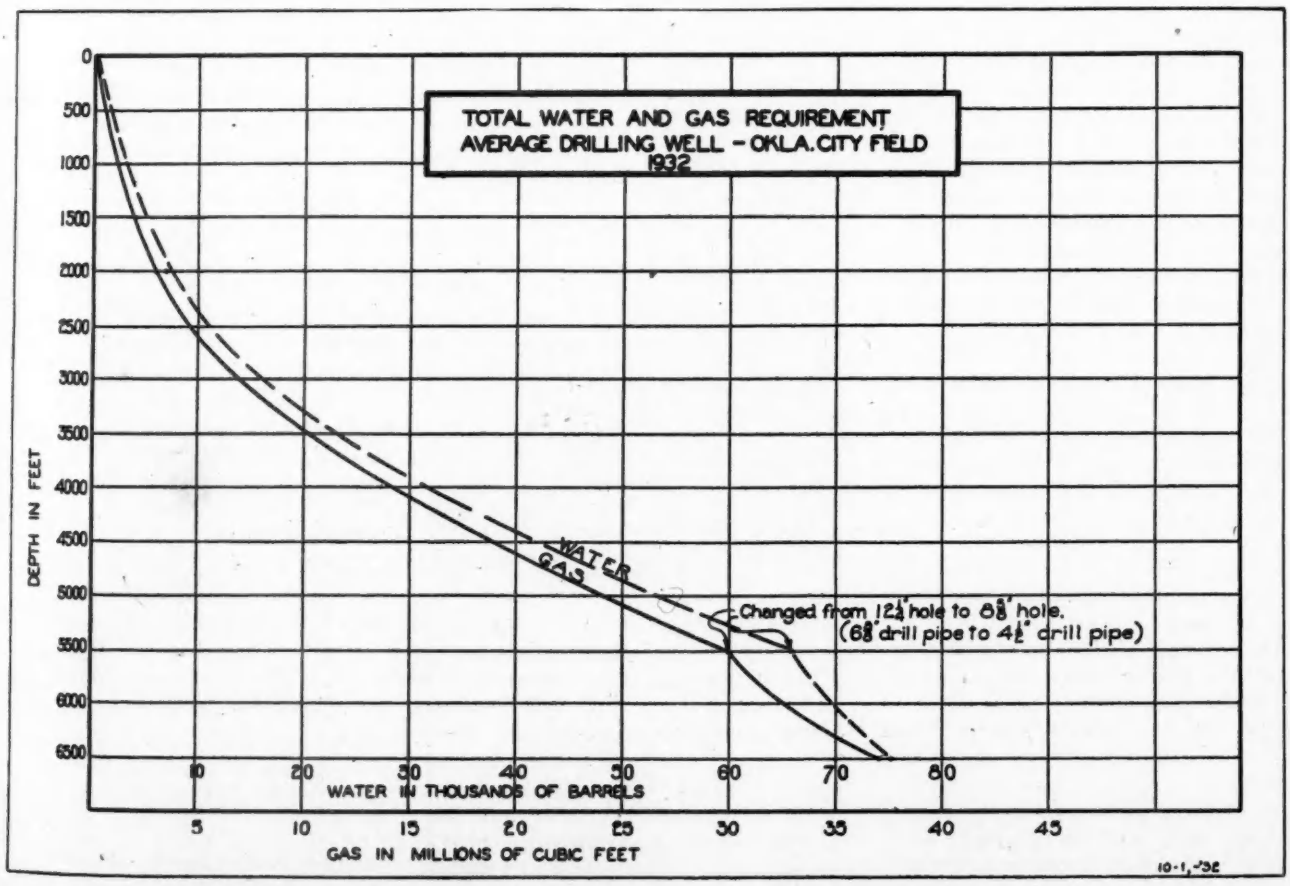


FIG. 2

TABLE 6
Sizes of bits used in Oklahoma during past two years.

Inches	Inches	Inches
24	11¾	7⅝
22	11	6¾
19¾	10¾	6⅛
19		
17¼	9⅞	5⅞
16	9	5¾
15	8⅝	5⅝
14½	8⅛	5¼
13¾	8	4¾
12½	7⅞	4
12	7¾	2-13/16

new when recently run. It was decided to make thread and drift tests as soon as the casing was pulled in order to determine the damage done to a once-used string of casing. This was considered a worthwhile effort in view of the possible mechanical hazards and the large investment involved in rerunning the casing in deep wells.

As each joint of casing was laid down after being pulled the collar and male casing threads were steamed. The threads were then cleaned with a wire brush and a light oil, after which they were again steamed. The thread and drift tests were made after allowing the casing to cool to approximately 70°. The thread gages consisted of a collar and nipple checks with certified A. P. I. gages. A number of sets of gages were made since they were to be replaced because of wear after 40 tests.

In the absence of an A. P. I. standard for the amount of stand-off in casing threads, the stand-off being necessary in making tests in accordance with the practice outlined in Section VIII of A. P. I. Stds. 5-A, some arbitrary basis for measurement had to be established. When the set of male and female thread gages were screwed into each other they were found to be "hand tight" when made up 21½ turns. When these gages were tried on new seven-inch casing they were found to make up approximately 21 turns. Considering this amount of make up between mating gages and between gages and new pipe, the results of tests on each joint of three strings of once-run casing showed that almost 95 per cent of the casing did not conform to the condition of new casing.

It was arbitrarily decided to accept casing for re-running which passed a hand-tight test of 16 turns in couplings and 19 turns on the male thread end, with the result that 30 per cent of the casing in three strings was rejected because of damaged threads.

Drift tests were made on the casing by the use of a drift mandrel with diameter conforming to the A. P. I. drift specifications, but as an added precaution the mandrel was made twelve inches long instead of six. The mandrel was pushed through each joint of casing by means of a sucker rod. Two or three joints in each of the three strings of casing were rejected because the drift mandrel failed to pass, indicating an out-of round condition which would not only materially lower the safety factor of the casing against collapse, but would also offer hazards of sticking bits, smaller casing and cementing plugs.

The economy of these tests seemed justified for several reasons. The rejected casing was moved directly from the pulling job to the shop, not only saving the expense of hauling it first to the well into which it was to be run, but also eliminating the time and hazard of picking up unfit casing, making it up at the well and then laying it down again. Careful gauging of used casing is also advantageous in preventing injury to a good thread as the result of engaging it with a damaged thread.

Bit Sizes

During the past two years 31 sizes of bits have been used in Oklahoma, as shown in Table 6.

Such multiplicity of bit sizes places an expensive burden on manufacturers and operators. The close relationship between bit and casing sizes has resulted in a suggestion that the number of bit sizes may be reduced by the establishment of uniform casing programs.

A second suggestion is to provide one bit size for each size of casing having three or less weights, and two bit sizes for each size of casing that has more than three weights. To carry out this plan would require approximately 25 bit sizes for the 15 A.P.I. sizes of casing.

For greater safety, it is felt that the size of drilling bits should not be greater than the A.P.I. drift diameter of the casing through which the bit is to be run. The use of larger size bits would run the hazard of injuring the casing or getting stuck. There are still cases in the Oklahoma City field where operators use 8⅛-inch bits inside of nine-inch O. D., 40-pound casing. The nominal I.D. of this casing is 8.150 inches and the diameter of A.P.I. drift is 7.994 inches. In that case the casing could conform with the A.P.I. drift specifications and yet the bit might wedge and cause a bad fishing job, a few of which have already been reported. However, the object of using this size bit is to get more clearance for running 6⅝-inch O.D. casing having couplings of 7.390-inch O.D. Referring to Table 5, this practice is shown as part of Program C, whereas Program B shows a much better balanced program so far as clearances and sticking hazards are concerned.

Referring to all three casing programs for the Oklahoma City field, as shown in Table 5, nine bit sizes cover all of these programs, including the bits to make hole for the surface pipe and for drilling into the sand.

The question of economies in bit sizes that can be accomplished by greater uniformity in casing programs and by proper correlation of casing and bit sizes appears to justify further investigation.

Summary

It is believed that the development of rotary drilling in the Oklahoma City field has contributed to improvements in general drilling practice which will be of value in the drilling of new fields, especially in deep drilling. It is significant that with the recently improved practices, better drilling time was made than during the intensive drilling of previous years.

The considerable decrease in time required to complete 6500-foot wells, the straightness of holes, the knowledge of water and gas requirements, casing programs and testing re-run casing, should result in greater economy and efficiency in the completion of wells.

Acknowledgements

Grateful acknowledgement is made for the assistance received from Shoenfelt and Hunter (drilling contractors), Sultan Drilling Company, and Phillips Petroleum Company. Especial acknowledgement is given to Indian Territory Illuminating Oil Company with whom one of the authors was connected as chief petroleum engineer during the time this paper was prepared.

MEN IN THE INDUSTRY'S NEWS

FRED O. LEFFLER, general superintendent of North American Car Company at Chicago, has just completed an inspection of the company's plants at Coffeyville, Kansas and West Tulsa.

M. R. BLACK, for seven years professor of the commercial department of Cleveland, Oklahoma, high school, has been made office manager for Johnson Oil & Refining Company at Cleveland.

S. L. LA MARR, head of the LaMarr Drilling Company of Wichita, Kansas, died there after an illness of more than a month. Mr. LaMarr was a native of New York and had followed the oil play through Pennsylvania and West Virginia before coming to Kansas where he was active in the development of El Dorado, Towanda, and Madison.

GUY DANIELSON has resigned as secretary and treasurer of Brauer Machine & Supply Company and is now special representative of the oil tool division of Chicago Pneumatic Tool Company. Danielson is making his headquarters at 1 West 16th Street, Oklahoma City.

HUGH ROBINSON, manager at Wewoka, and Chick Livingston, manager at Blackwell for Continental Supply Company, have recently exchanged districts and are now at their new posts.

W. J. DEAN, superintendent in the Oklahoma City district of Magnolia Pipe Line Company, will retire December 1, bringing to a close 16 years of service with the company.

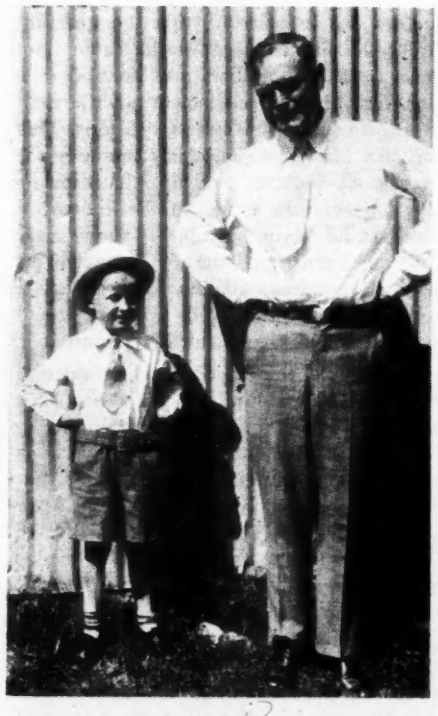
LLOYD HOLSAPPLE, petroleum engineer for Sinclair Prairie Oil Company at Longview, and Miss Elizabeth Mize, of Checotah, Oklahoma, were recently married in Monroe, La., and are making their home in Longview. Mr. Holsapple, before the Sinclair-Prairie merger, was petroleum engineer in the Seminole district for the Sinclair Company.

LUTHER H. WHITE, J. A. Hull Oil Company, and Mrs. White announce the arrival of Robert Clark White, who gets off to a great start at 9½ pounds.

J. B. DURKEE, district representative in North Texas, North Louisiana, and Southern Arkansas for A. M. Byers Company, was recently transferred to Tulsa, from which point he will represent the company in Oklahoma and Kansas, working directly under the St. Louis branch office. Mr. Durkee formerly made his headquarters in Dallas.

NOBLE C. GINTHER is back in Houston, trading independently in oil properties. He has been out of the Gulf Coast district for several months, doing work for Macmillan Petroleum Corporation, and was previously with Houston Oil Company as oil scout in the coastal country and in East Texas.

A. K. TYSON, geologist for Continental Oil Company at San Antonio, conferred at Houston last week with officials of his company who were in attendance at the American Petroleum Institute meeting.



"Hot Shot" Tuttle brought his Dad all the way from Benavides to Houston to show him the sights, during Mr. Tuttle's vacation recently. When asked if we could take his picture, "Hot Shot," as he is known all over the free state of Duval, quickly replied "Seguro Miguel," His Dad properly identified is J. I. Tuttle, superintendent, Humble Oil & Refining Company with headquarters at Benavides, Texas

WILLIAM KECK, president of Superior Oil Company, recently resigned from the chairmanship of the executive committee for equitable curtailment in California. He remains a member of the Kettleman Hills committee.

H. B. SIMCOX has been transferred to Los Angeles as manager of California operations for Continental Oil Company. He will reach the West Coast around November 25. Continental Oil Company has extensive holdings at Kettleman Hills and Seal Beach, and recently discovered the San Miguelito field.

JOSEPH P. SMITH, State Real Estate Commissioner, addressed a large number of subdividers of oil lands at Los Angeles, November 10. He stressed the fact that racketeering in oil investments must stop, and that the promotion must have a reasonable chance for success.

C. W. BURNS, executive vice president of Richfield Oil Company of New York, has returned to the East after a business trip to the home office at Los Angeles. He returned by airplane via Houston.

EARL SNEED of Tulsa, has been elected president of Y Oil & Gas Company; Dale Sneed of Tyler, Texas, vice president and treasurer; D. T. Anglin, New York, vice president; H. H. Houston, Tulsa, vice president; E. J. Highfill, Tulsa, secretary and assistant treasurer; L. Swem, Tulsa, assistant secretary and assistant treasurer; and G. C. Anglin, New York, assistant secretary. In addition to the above the board of directors is composed of E. N. Adams, L. D. Edgington, and A. K. Dawson all of Tulsa, and A. F. Leopold, Chicago. The company has producing properties in Seminole, Wewoka and East Texas.

RICHARD R. CRANDALL has been appointed general manager of the La Brea Oil Company, with headquarters at Los Angeles.

RALPH B. LLOYD, president of the Oil Producers Sales Agency of California, recently addressed the Electric Club of Los Angeles in the form of an appeal to various business to support the oil curtailment movement.

Difficulties in the Russian Petroleum Industry

(Translation of Article From The Deutsche Allgemeine Zeitung of September 24, 1932.)

THE accompanying translation of an article which appeared in Deutsche Allgemeine Zeitung of September 24, 1932, has been called to the attention of THE OIL WEEKLY *by John L. Cobbs, Jr., assistant to the president of Shell Union Oil Corporation, New York, in a letter which reads as follows:*

"There has been so much speculation in regard to the influence which Russian oil exports might be expected to have upon the recent efforts to stabilize conditions in the world oil trade that I believe you will be interested in the attached translation of an article which appeared in the Deutsche Allgemeine Zeitung of September 24th.

"While the whole article is full of meat, the last paragraph is particularly interesting as indicating the necessity for a new line-up in the Russian export policy.

"The comment which has been added at the end of the article indicates how any further decrease in production and increase in Russian domestic consumption will naturally reduce the amounts of Russian oil actually available for export."

THE petroleum branch writes us:

A striking slowdown has begun in the tempo of development of the Soviet Russian petroleum production. The actual work accomplished with respect to drilling activities falls more and more behind the estimates; the refining and selling no longer move in a steeply ascending line.

The accomplishments of the Soviet Russian petroleum industry since the first five year plan went into effect cannot be denied, although such accomplishments were achieved with extreme effort and frequently through the application of methods that have hardly anything to do with rational production. The development is characterized by the following review:

	1927/28	1931	Rise %
Drilling done in meters.....	350,105	783,185	124
Crude oil production in 1000 tons	11,544	22,335	95
Crude oil refined in 1000 tons	8,675	19,927	130
Gasoline produced in 1000 tons	853	2,653	211
Domestic sales in 1000 tons..	6,685	11,885	78
Export in 1000 tons.....	2,728	5,277	95

These figures, although giving a clear picture of the purely quantitative growth of the industry, illustrate at the same time that in a principal activity, that of crude oil production, such growth has been accomplished at the expense of the productivity of the work performed. The drilling done shows a sharper increase than the crude oil produced, which means, that the productivity of the wells drilled has decreased. While well meters drilled in each 1927 and 1928 produced 32.9 tons of crude oil, the production in 1931 amounted to only 28.5 tons, and this decrease has taken place even though the wells were exploited to the extreme limit of their productivity. By way of comparison it is stated that in Rumania borings carried out from 1927 to 1931 have decreased from 247,000 meters to 137,500 meters but in spite of this the quantity of crude oil produced in the same time rose from 3.66 million tons to 6.66 million tons, i.e. the coefficient of the drill work went up from 14.8 to 49.5 tons. This unfavorable development in Russia is not necessarily indicative of an exhaustion of the deposits—the riches of the known oil fields stand beyond doubt—it shows only that the intensity of the drilling activities has not kept step with the taking of crude oil; i.e. the existing wells were exploited faster than was economically permissible.

In spite of this fact, actual production has fallen far behind the estimate. It is true that the Soviet government celebrated the "completion" of the five year program after an elapse of 2½ years, but that concerned the very original figures of the plan, which, soon after being drawn up, were rejected as "sabotage," in order to be replaced by considerably higher figures. From a crude oil production of 21.7 million tons—which were originally predicted for the last plan year (1932-33)—a proposed production of 39 million tons was finally arrived at. But the course of the crude oil campaign of 1931 showed that they had aimed far beyond the obtainable goal. And so in February, 1932, the XVII Federal Congress of the Pan Russian Communist Party had again to reduce the controlling figures of the production for the current final year to 27.3 million tons. Judging from the results thus far obtained, however, even this 11.7 million tons lower crude oil production is not likely to be attained. The months January-July of this year yielded a production of 13.09 million tons, i.e. a monthly average of 1,857,000 tons which, figured over the whole year, would be only 22.28 million tons. That is just about as much as was produced in 1931, or five million tons less than the lower (revised) estimate provides for. How anyone can hope to arrive at a production figure of 80.5 million tons up to the end of the new plan (1937), is hard to understand.

The causes for this situation, so adverse to the plan, are of a manifold nature. In official statements they are attributed to "disturbances in the regularity of the rise," which have their cause in "stagnation in certain fields of the production technique." "It may be easily understood," says an article accompanying the statistics covering the first half year of 1932, "that the training of new groups of laborers, the application of intensive drilling and refining methods which were not yet known one or two years ago, include difficulties which can temporarily interfere with the rise of the production curve."

What do these difficulties mean, practically speaking? The drilling achievements are qualitatively insufficient, the shutdown of drilling as a result of inferior drilling implements is the order of the day. Owing to the lack of drilling equipment the opening of work in new fields cannot be sufficiently increased to combat the shortage by means of corresponding new production. As a result of lack of tank space the crude oil produced can frequently not be stored, or it must be stored in primitively built dams of clay. Shortcomings and friction of a technical and organizing nature are also noticeable in the crude oil refining in spite of the accomplished building and expansion works which are undoubtedly worthy of respect. There is a lack of the necessary skilled labor and of working material, the handling of raw materials suffers from insufficient supply and storage facilities, through which also the storage and the further transportation of the finished products is extraordinarily handicapped, while urgent domestic wants cannot be supplied. The industry for the equipment of the oil industry has not yet reached a degree of technical development which would make readily available drilling material and refining accessories of the required quality and in sufficient quantity. The importation from abroad of such supplies is only possible to a limited extent owing to lack of foreign credit.

The greatest handicap of the Russian petroleum industry is the inadequacy of the means of transportation. Being compelled to solve urgent problems, the Soviet

government has been unable to pay the necessary attention to the equipment and improvement of such means. This neglect now begins more and more to show its effects. The present oil pipe lines are entirely insufficient in proportion to the production. The present parking space for tank cars is, in spite of its being used to its maximum capacity, also incapable of keeping the necessary transport under control. Consequently we usually find overfilled storage tanks in the production districts and near the refineries.

The difficulties in the interior must also have a detrimental influence upon the petroleum export of the Soviet Union. The storage and transfer facilities in the shipping ports Batum and Tuapse are overtaxed, the waiting time of the tank steamers must frequently be prolonged many times the usual docking time, because their filling cannot be effected quickly enough. Owing to the stoppage of the railroad channels the transfer frequently suffers days of delay. For the first time during the history of the Russian petroleum industry after the war, the export for the first half year of 1932 experienced no increase worth mentioning.

The standstill of the Russian exports is by no means attributable to merely technical organizing factors. To a much greater extent the Russian export business has suffered injury also as a result of the shrinking demand in the countries of outlet (foreign markets). The decreased sales cannot be balanced up by the exceptionally large orders such as recently were secured—in some instances (France, Turkey, New Zealand). The expansion of its (own) business organizations abroad has already been brought to an end through its financial demands. From this impaired position of Russian petroleum on the world market, it is evident that the large oil groups decided to break off negotiations with the Russians in New York and that they seem to have little inclination to enter into new negotiations with them.

Thus, Russian oil policy finds itself faced with momentous decisions. A continuation of forced exports in order to secure proceeds through greater sales seems useless. The export of mineral oil can only fulfill its financial-political task for the Russian payment-balance when the prices on the most important markets experience an improvement. The changed attitude of the Soviet Russian business organizations, as expressed for some time in the price quotations and in the selling conditions on the German market, leads to the conclusion that existing conditions make necessary a new orientation of Russian oil exports.

Comment on the above:

Based upon the output for the first six months of the year, the production of Russian oil in 1932 would be 22.28 million tons. In view of conditions described in the article, it seems entirely possible that actual production may very easily fall short of the indicated figure. Should production fall off by as little as 10 per cent, the output would be reduced to about 20,000,000 tons. Under the five-year plan the new machinery installed is driven almost exclusively by oil, and Russian domestic oil consumption, already severely restricted, cannot be further lessened. On the contrary, it must in all probability be increased. Any decrease in production therefore must result in lowered exports, and a reduction of 2,000,000 tons in total output would consequently reduce exports from 6,000,000 tons to 4,000,000 tons, or 33 per cent. If production continues to decrease, it is quite possible that Russian exports may have disappeared entirely by next year.

Argentine Oil Imports Lower Than Last Year

Buenos Aires, Argentina.—Petroleum imports of Argentina during the first half of 1932 were lower than in the corresponding period of 1931 for all items except Diesel oil. The imports for the first half of 1932 consisted of 930,510 barrels of petroleum for refining as against 1,510,061 barrels in the corresponding period of 1931; 282,195 barrels of gasoline against 1,036,900 in 1931; 31,279 barrels kerosene against 175,868 barrels; 69,748 barrels lubricating oils against 93,611 barrels; 2,057,054 barrels of fuel oil against 2,280,853 barrels; 114,485 barrels of Diesel oil against 81,347 barrels! 6634 barrels gas oil against 24,484 barrels; and 1,023,479 pounds of lubricating grease against 1,862,112 pounds.

Oil Sand Is Mined In German Field

Hanover, Germany.—Oil in commercial quantities has been produced in the Wietze field, province of Hanover, Germany, since 1873. The peak year of production was 1908, when the field yielded 829,000 barrels of oil. After that year the production curve began to decline, until it reached 230,317 barrels in 1920, all production meanwhile coming from depths less than 900 feet. Deeper drilling began soon after 1922, however, and since that year production has risen steadily, reaching 316,695 barrels by 1929.

The rising production at Wietze is due particularly to the activities of Deutsche Petroleum A. G. Using the successful method it employed at Pechelbronn, Alsace, of "mining the oil sand," the company has built and operated since 1920 two shafts, each 750 feet deep, in which saturated oil sand is mined, lifted to the surface, and washed out by steam and hot water.

The process has the advantage that there is no waste of oil. The last drop of it is squeezed out when the clean sand comes out of the plant, piles up in big heaps, and finally goes back through an old drill hole several hundred feet deep, down again into the empty mines. Drilled holes are also used for throwing down lumber for reinforcing and building the mines.

Deutsche Petroleum A.G. is producing through this process of mining and washing the oil sand over 200,000 barrels of crude oil each year.

The main operating company at Wietze aside from the Deutsche Petroleum A.G. is "Elwerath." Those two companies are producing about 80 per cent of the total output of the Wietze-Steinforde field.

By this means is transported the oil sand which is lifted from underground through shafts at Wietze, Province of Hanover, Germany. The oil content of the sand is washed out by steam and hot water, and the sand is then returned into the mines.

CALIFORNIA FIELDS

Shore Line Producers Will Not Have Offsets; Test Has Tunnel Connecting With Cellar; Basin Wildcats Quiet.

BRAD MILLS, *Staff Representative, Los Angeles, California*

Sutter County Wildcat Is Prepared for Heavy Gas

San Francisco.—The unusual precaution taken by Butte Oilfields, Inc., in drilling its wildcat test at the Marysville Buttes in Sutter County has attracted the attention of petroleum engineers, who have not been accustomed to such elaborate preparations in unproven districts. The company has announced that it expects to encounter a heavy gas pressure at a nominal depth. A string of 16-inch casing will be set above 1000 feet, a feature of the string to be a heavy control valve operated through a 106-foot tunnel which connects with the cellar. The cellar is modeled after a set of specifications used in Mexican oil fields and is said to be the only one of its type in the United States. It has two-foot walls from top to bottom and a five-foot concrete base. This base is toed under the sidewalls and into the surrounding formation. Eight two-inch eye bolts with one-inch steel plates at their base are run through the concrete cellar base. This precaution insures anchoring down the pipe in case of high gas pressures. The well was started three weeks ago and is now drilling below 550 feet. More than 500 feet of bluish shale of the Chico formation was cut, and the present formation shows the andesite sill.

North Dome Extension Try Has Small Chance of Success

Coalinga, Calif.—Extension of the North Dome by more than two miles appears very doubtful, and suspension of operations in North Kettleman Oil & Gas Company's Lillis-Welch 1 may follow questionable showings above the Whepley shale. This wildcat test on the extreme northwest flank of the structure is now drilling around 9650 feet, and the Whepley shale is expected above 9800 feet. The well was drilled with the full realization that it had a chance for failure, and work was not done in the nature of the usual promotion. The operating company has attempted to extend the North Dome far toward the northwest, and did actually find the Temblor above the level expected by most geologists. The structure dips less violently on the northwest tip than along the sides, and much has been learned from the venture. The well still has a chance to produce, but the odds are definitely against success. The formation below 9600 feet was chiefly black shale.

Petroleum Securities Company is completing Felix 3 at 8516 feet, and will include about 835 feet of the intermediate and lower Temblor below the last cementing point. The 6⅝-inch combination string was landed on bottom and cemented through perforations at 7280 feet.

Shutting off of the upper portion of the Temblor has almost eliminated gas waste in the field. The first completions came in with a very high gas-oil ratio and a comparatively small flow of light oil. Cementing off of the upper part of the zone has resulted in a much larger production of 38 gravity oil and a smaller flow of gas. A few wells are still producing from the top of the Temblor, but they fill the bulk of gas requirements.

Thirty-two wells are on production, and average daily production is slightly less than 60,000 barrels. Several completed wells are shut in, while the potential production of active producers is far above the current flow. The average cut is less than one per cent, and the highest cut is seven per cent. All edge wells on the northwest flank are producing clean oil, and only two wells are showing cuts above five per cent.

Basin Wildcat Possibilities Hold Small Interest

Los Angeles.—Absence of an interesting wildcat in the Los Angeles basin is in sharp contrast to almost any period of several years ago, and it may be some time before an extensive effort is made to open new producing districts in an area which has been drilled from end to end. Major companies have temporarily abandoned efforts to find a new field, but a few independents are still plugging away, with the usual odds against them. One of the most interesting wildcats in the district is Cooperative Development Company's Mesmer 1, test near the Playa del Rey field, which is now drilling in brown Miocene shale below 6125 feet. No interesting attempts are under way to extend the major producing fields, but a few edge tests are being drilled. The cost of drilling has been reduced sharply, but conditions have not warranted wildcat operations where too much oil is being produced. Such questionable districts as Newhall, Newport Beach and the east end of the basin are all but deserted. The west part of the Los Angeles basin has not been as extensively drilled as the central and east part, but the chances for production probably are less than in the more central areas.

Tideland Drilling Tabooed In Huntington Beach Field

Huntington Beach, Calif.—Defeat of the state proposition which would have permitted drilling the tidelands in the Huntington Beach field eliminates possibility of extensive operations along the waterfront. The plan was to lease the ocean strip for drilling offsets to 15 producing wells along the shore line which are owned by Standard Oil Company of California. The City of Huntington Beach and State of California would have profited by the development, but the drainage certainly would not have benefitted the shore line producers. Most of the Huntington Beach city officials claimed that the beach was already spoiled, and that drilling a line of wells in the ocean would not lower the little beauty that remains.

Playa del Rey Not Expected To Resume on Large Scale

Los Angeles.—Playa del Rey, one of the last townlot fields to be developed in California, now shows little evidence that it so recently aspired to become a factor in state production. Only two wells are active in the field, and only the widest stretch of the imagination can picture a resumption of operations on a large scale. Development of the shallow zone appears definitely past, but the deeper sand does offer some chance to increase production. Most of the townlot wells were completed in the shallow zone. The deep sand has proved best on the large leases and the strip along the ocean to the southeast. Union Oil Company is completing Vidor 2 in oil sand and conglomerate at 5826 feet, but does not expect a large well. Another well will be drilled as an offset to the well being finished. This company controls the largest leases in the field, and may be one of the few operators to drill successfully. The absolute limit of the field has not been established toward the northeast, but a large acreage between the most distant producers and the townlot district has not been drilled intensely. Deepening to the schist or bottom formation promised considerable action for a time, but conditions have not warranted extensive field operations in a district which has not yielded a single 5000-barrel producer.

"Steel Island" Well Should Complete Early Next Year

Ventura, Calif.—Indian Petroleum Company is drilling below 300 feet in Permit No. 82-2, ocean test in the Rincon field which is being drilled on a steel island about 2700 feet from shore, and should complete the well soon after the first of the year. A run of good luck may bring a completion much sooner. Construction of this isolated pier ranks as one of the outstanding engineering achievements of the year. The steel platform is 60 by 90 feet and rests on steel piles driven in about 37 feet of water. Careful planning was necessary to provide for all drilling equipment on such a small rectangle. Gasoline engines are used for power, while ocean water is used for most purposes. Driving of the piles in open ocean water was a difficult job, and it was necessary to erect a steady false work before attempting to force the steel piles into the hard shale. The well appears to be on structure, and an extension of the field is possible. A successful completion at this point would insure a large drainage area and a steady production.

Continental Leases 3600 Acres Near Casitas Pass

Santa Barbara, Calif.—Continental Oil Company recently leased more than 3600 acres near Casitas Pass, a few miles north of the San Miguelito field and in the Red Mountain area. The leases lie in Township 3e and Range 24w. The objective formation in this district is chiefly Sespe. The Miley interests drilled to about 4800 feet in the area a few years ago, but interest in the Sespe has never completely vanished.

Hopper Canyon Promises Shallow Oil Producer

Los Angeles.—More than 500 feet of oil sand has been cored in Sovereign Oil Company's Leaven 1, a test in the Hopper Canyon district, and a string of casing may be run for a production test above 1200 feet. The present depth is 1025 feet, and while a spectacular discovery is not expected, a good shallow producer is possible. Interest has been revived in this shallow producing district, and an improvement in the industry should result in wildcatting over a considerable area. Bardeen Petroleum Company completed one good producer in the district and is trying to complete a second well at 2757 feet. The first producer yielded a light oil with a good gasoline content. The geologist for Sovereign Oil Company believes that Leavens 1 is now drilling below 1000 feet in the Temblor formation, but no definite evidence has been found. The small cost of development in this area and the chance for shallow production are proving attractive.

Bakersfield, Calif.—Roads are being built to the new location made recently in the Lost Hills field by Associated Oil Company and others for a deep test. The location is on Section 2-26-20 and was made after a long examination. This field has been a shallow producer for years, but the deeper tests have been abandoned or shut down without favorable results. Several companies are interested in the most recent locations, but Associated Oil Company will do the drilling.

Prospect Not Bright For Santa Barbara Wildcat

Santa Barbara, Calif.—Cuyama Valley Oil Corporation has developed a good gas pressure in No. 1, a wildcat test on Section 12-10-27 in Santa Barbara County, but the last cores do not point to a sensational discovery. The well has been drilled to 1985 feet in gray sand, and reports that the well had blown out were exaggerated. The hole was filled with heavier mud, and other precautions were taken to prevent a blowout. No casing has been run. An examination of the cores showed some oil and gas, but the sandy formation shows only average promise.

California Field Developments

Completions

Company, Well and Location	Initial Production Bbls.	Depth
FRUITVALE—		
Petrol Producing Co., Bloemer 1	300	4090
MESA—		
Pacific Gulf Oil Co., Rogers 2	200	2100
OJAI—		
G. L. Stobeck, No. 1	10	610

New Operations

BUTTONWILLOW — Milham Exploration Co., S. P. 43-1, 1-28-22.

ELWOOD—Barnsdall Oil Co., No. 88-9, 15-4-29.

FRESNO COUNTY—Bergman Oil Co., No. 1, 12-12-11.

LONG BEACH—Charles W. Fourl, No. 4, 19-4-12.

MT. POSO—Julian J. Miley, Salisbury 1-A, 27-26-28.

Wildcat Drilling Report

(Wells shut down not included)

KERN COUNTY

BUTTONWILLOW — This field has been placed in the proven column, but edge tests will be considered as wildcats.

DEVIL'S DEN—A. S. Halladay's Lincoln 1, 11-25-18, moving in equipment to deepen from 780 ft. Tom Hannah's No. 1, 25-25-18, dr out cmt 3455 ft. Pyramid Hills Oil Co.'s No. 1, 24-25-18, dr hard sand 2165 ft.

LOST HILLS—Associated Oil Co. et al's Williamson 1, 2-26-20, lcn; this test wildcat in deep zones only.

McKITTRICK—Ozena Oil Co.'s No. 2, 27-29-21, plugging back from 3025 ft. T. H. Purman's No. 1, 22-29-21, dr brown shale 4816 ft. Welport Oil Co.'s No. 2, 19-29-21, dr hard brown shale 767 ft.

SANTA BARBARA COUNTY

CARPENTERIA — Casitas Oil Co.'s State 202-2, sr to straighten hole, td 2205 ft.

COAL OIL POINT—Bolsa Chica Oil Corp.'s No. 191-1A, flowing salt water and trace of oil, td 4089 ft, may drill another well.

CUYAMA—Cebrian and Perkins' No. 1, 27-10-26, rig. Cuyama Valley Oil Corp.'s No. 1, 12-10-27, dr shale 1960 ft.

LOMPOC—O. C. Field Gasoline Corp.'s McLean 1, 6-7-33, pulled liner and will make test on pump, td 3052 ft. W. M. Lee's No. 1, 28-8-34, lcn.

ORELLA — Oakburn Oil Co.'s Sperry 1, pumping oil and water, td 2821 ft.

SANTA MARIA—Superior's Newhall 2, sp as core hole.

SANTA ROSA ISLAND—Standard's Island 1, coring gray sand 4500 ft.

VENTURA COUNTY

CONEJO — International Oil Developers' Powell 1, 33-2-20, sr 2206 ft.

FILLMORE—Sovereign Oil Co.'s Leavens 1, 23-4-19, dr shale 765 ft.

HOPPER CANYON — Bardeen Pet. Co.'s Lankershim 2B, 13-4-19, co 2757 ft, pumped light oil on recent test. Commander Oil Co.'s Fennel 1, 13-4-19, sd 2100 ft.

LAS POSAS—Las Posas Pet. Co.'s Mahan 1, 22-3-20, rig.

OJAI—Livermore and Kennedy's No. 21, 33-4-23, dr shale 808 ft.

RINCON—Woodrow Pet. Corp.'s Woodrow 1, 4-3-24, dr shale 5640 ft. Honolulu Consolidated Oil Co.'s Valenzuela 1, 23-3-24, dr shale 1535 ft.

SANTA PAULA — Hardison and Temple's O'Hara 1, 22-4-21, sd 220 ft. E. M. Lesperance's Boosey 1, 31-4-20, rig. J. W. Mosher's No. 1, 22-4-21, dr shale 700 ft.

SESPE—Harmon and Deal's No. 1, 33-5-19, dr shale 1425 ft. H. A. Iver's Star 7, 1-4-20, co 1600 ft. Merchants Pet. Co.'s Cochran 6, 1-4-20, redrilling 100 ft.

SULPHUR MOUNTAIN—Wilshire Oil Co.'s Thompson 1, 20-4-21, dr shale 925 ft.

TIMBER CANYON—Petro Well Producing Co.'s No. 4, 18-4-20, dr shale 1938 ft. Superior Oil Co.'s West 3, 13-4-21, dr shale 6518 ft.

MISCELLANEOUS

KINGS COUNTY—Knudsen and Schmidt's Avenal 1, 36-23-17, co 5765 ft. Triune Gas, Oil and Land Co.'s No. 1, 5-23-20, bailing for shallow production test, td 1100 ft.

FRESNO COUNTY—John F. Oliver's No. 1, 20-15-18, rigging rotary.

MERCED COUNTY—Harry Bergman's Oro Loma Farms 1, 12-12-11, sp. Los Banos Pet. Co.'s No. 1, 26-10-9, rig.

MONTEREY COUNTY—Western Gulf Oil Co.'s Johnson 1, 29-12-2, lcn.

SAN LUIS OBISPO COUNTY—Kent and McDonald's No. 1, 3-32-22, dr shale 3550 ft. Shell's Nahoney 1, 4-25-12, dr shale 3535 ft.

SOUTHERN CALIFORNIA

EL MONTE—Andrus and Hutcheson's Fee 1, 11-1-11, dr sand 665 ft.

HASLEY CANYON — W. A. Smith's Gilmore 1, 32-5-7, bailing 3215 ft.

HERMOSA BEACH—Mira Vista Oil Co.'s Calico 3, 6-4-14, co 2535 ft.

HUNTINGTON BEACH — Matilda Shallemiller's Permit 194-1B, 32-5-11, validation hole drilled to 2000 ft, equipment removed.

LYNWOOD—William L. Jones' Graham 1, 31-2-12, dr shale 4430 ft.

NEWHALL—W. L. Alexander's Alexander 1, 1-3-16, rigging up rotary. W. T. Ball's Newhall 1, 34-3-16, redrilling 1515 ft. Superba Pet. Co.'s No. 1, dr hard sand and shale 225 ft.

PLAYA DEL REY—Cooperative Dev. Co.'s Mesmer 1, 26-2-15, dr shale 6128 ft. Del Rey Hills Oil Corp.'s U. C. S. 1, 26-2-15, rigging rotary.

WILMINGTON—Walter I. Barcus' Pacific-Lupie 1, rig and equipment.

SAN BERNARDINO COUNTY — Great American Pet. Co.'s Gapco 1, 18-2-8, rigging rotary.

OKLAHOMA FIELDS

Oklahoma City Has Produced 116 Million Barrels; Seminole, 603,164,900 Barrels; Brock Sand Goes Under Proration.

FLOYD SWINDELL, *Staff Representative, Tulsa, Oklahoma*

Yield From New St. Louis Area Discovery Well Drops

Seminole, Okla.—Hilton Phillips et al's Garrett 1, CSW SW SE Section 21-7n-4e, new discovery in the St. Louis area of the Seminole district, continued to fall off at an alarming rate, swabbing only 850 barrels in 24 hours and cutting from four to five per cent water. Operators were not swabbing below 500 feet from the surface so no test has been made on the amount of water in the hole. Completion of this test between St. Louis and Pearson Switch slightly over a week ago indicated that a "high" of some importance had been found and two additional locations were made. Its initial gauge was about 2700 barrels flowing natural. Phillane Oil Company's Garrett 1, CSE SE NW Section 28-7n-4e, a half-mile north and one location west of the Hilton Phillips well, swabbed 205 barrels in six hours from Viola lime and Simpson dense pay topped at 4075 feet and drilled to 4110 feet. This test has been shut in most of the time since it first found oil, having had some difficulty in securing connections. Stewart et al's Bailey 1, CNW NE NE, in the same section, tested 85 barrels in two hours on the swab, producing from Viola lime topped at 4081 feet and Simpson formation topped at 4128 feet and drilled to 4178 feet. It also has been shut in awaiting connections and additional tankage. Magnolia Petroleum Company announced location for Hines 1, CSW SW NE Section 28-7n-4e, east offset to Phillane Oil Company's Garrett 1, and Sinclair Prairie Oil Company was digging cellar for Deathrage 1, CNE NE NW Section 28-7n-4e, three locations north of the Phillane well.

Wewoka-Holdenville Area

The Brock or deep sand production of the Wewoka-Holdenville area went under proration November 15, restricted to 20 barrels flat allowable to each of 13 producing wells and 2.92 per cent of the potential after deducting the flat allowable. Daily outlet of the sand is based on the 500 barrels daily nomination of Stanolind Crude Oil Purchasing Company, only purchaser from the deep sand area. Daily estimated potential at the time of going under proration was 8203 barrels. Since that time several wells have been completed and the necessary adjustments will be made as soon as gauges have been completed. Rudman et al's Long 1, SE SE SW SW Section 10-7n-8e, cored sand from 2888 to 2900 feet and set eight-inch casing at 2890 feet. The plug was drilled with rotary tools and after bailing operators had a flow of gas and oil which overloaded the single trap and threatened to go out of control. It is now shut in for additional separator volume and repairs to connections. Key-Okla Oil Company's Davis 2, CEL SE NW Section 14-7n-8e, an old well drilling deeper from the upper sand, has a hole full of water from sand at 1215 to 1218 feet and is shut down for orders. It was originally completed June 29, 1923, making 10,000,000 cubic feet of gas from sand at 993 to 1000 feet. Operators probably will decide to go ahead to Booch sand at around 2900 feet. George Orr et al's Chupco 1, CNW SW NW Section 15-7n-8e, was drilling plug after setting six-inch casing on top of the sand at 2886 feet.

Wentz Pool Discovery Well Overproduced 18,507 Bbl.

Tulsa.—In a statement issued Monday, November 14, Ray M. Collins, state proration umpire, shows Shell Petroleum Corporation et al's Community-Wolff 1, CSE NW Section 17-20n-2w, discovery well in the new Wentz pool, southwestern Logan County, to be overproduced 18,507 barrels under the proration regulation which allows 50 barrels per day to wildcat completions. The allowable period commenced September 22 and extended until the well was plugged back and shut in, during which time it produced 22,042 barrels against an allowable of 3535 barrels. Initial production was set at 1835 barrels, highest gauge during the test period. Unless reclassified the well will be required to remain closed in 370 days.

Opinion as to the importance of this discovery which attracted more attention than any other Oklahoma test in several years, remains divided. It is now generally believed to be an edge well but there are those who are not satisfied with the Simpson section which was encountered and who do not rate the area as one of major importance.

Stanolind Oil & Gas Company was drilling below 2650 feet without having picked up any key beds in Kolb 1, CNE NW Section 33-20n-2w, 2¾ miles southeast of the discovery well. This test is being drilled with a Waukesha-Allis Chalmers power unit which is seeing its first oil field service and one which will be watched with interest since it incorporates many new features.

Work-Over Leads to Deepening Campaign

Guthrie, Okla.—Wentz Oil Corporation's Williams 2, NW NW NE Section 31-19n-4w, in the old Roxana pool of northwestern Logan County, was at the head of interesting completions during the week when it yielded 980 barrels the first 24 hours from pay sand at 6178 to 6181 feet. During the last six hours it was flowing at the rate of 67 barrels per hour. The well originally was completed October 22, 1929, flowing initially 2100 barrels from Wilcox sand at 5943 to 5953 feet. Early in August of this year Shell Petroleum Corporation started deepening McCully 6, NE SW SE Section 30-19n-4w, making 1100 barrels on recompletion in what was then correlated as School Land sand of the Oklahoma City type section. Immediately upon recompletion of this well owners of several offset properties announced intention to deepen. This intended activity was forestalled by an operators' agreement which provided for shutting in McCully 6 and postponing new work on offset properties. Recently, Cosden & Company, which is now in receivership, was instructed by the court to proceed with its work on the southeast offset property, thereby forcing Wentz Oil Corporation to deepen its lease which lies directly south of the McCully.

First reports state that sand in the Wentz well is being correlated as Hammer-Haindl, found about 300 feet below the base of Wilcox sand and directly below School Land sand in the Oklahoma City pool. The new sand in McCully 6, was correlated as School Land. Whether the two wells are producing from the same sand is not known and is a matter of little consequence the important thing being that both probably have a chance to find production also in the Kinter zone which should be found not more than 500 feet below base of the Wilcox sand and

less than 200 feet below the present depths of the two wells. In the Oklahoma City pool the Kinter zone, also known as "Olds," "Johnson," "Lowery," or "Hoopes," ranks next to the Wilcox sand in oil and gas potentialities.

Facts and Figures Seminole District

Tulsa.—As of October 1, 1932, the Seminole district, comprising the Allen, West Asher-Wanette, Bowlegs, Carr City, Old Earlsboro, East and South Earlsboro, Earlsboro Townsite, Konawa, Little River and East Little River, Maud, Mission, Sasakwa, Searight, Seminole, East and West Seminole, and St. Louis pools, had a cumulative recovery of 603,164,900 barrels, or an average recovery of approximately 18,000 barrels per acre. After more than six years which have elapsed since discovery of the first Seminole pool, the district is one of the most active in the state with four locations, 12 rigs, 21 drilling wells, and nine locations shut down. Approximately 4000 wells have been drilled since the discovery date, of which number more than 2600 wells are still producing. Daily estimated potential as of November 1, 1932, was 277,744 barrels daily. The district has gradually developed a water problem which indicates that the older pools cannot be depended upon to remain in the front ranks of Oklahoma production for any appreciable time. As of July, 1932, daily average water production was 184,467 barrels compared with approximately 135,000 barrels daily oil production.

King Royalty Company Buys Panhandle Properties

Amarillo, Texas.—Controlling interest of the Dixon Creek Oil & Refining Company, Amarillo, owner of about 1100 barrels of settled production in the Panhandle, a skimming plant and a large proven gas acreage, has been acquired by the King Royalty Company, Wichita Falls. The latter purchased the bulk of the stock interest held by S. D. and W. W. McIlroy, brothers, and their immediate associates. Although re-organized in December, 1930, Dixon Creek Oil & Refining Company is a pioneer operating unit in the Panhandle, and its organizers completed the first oil producer in the Borger section of the district.

Oklahoma City's Output Estimated At 116 Million

Tulsa.—Estimates from five different sources show Oklahoma City cumulative production as of October 1, 1932, ranging from 116,000,000 to 120,000,000 barrels. Considering the large number of irregularities which have been discovered in reporting production to the umpire's office and in the scout check meetings, the latter figure is believed to be the most nearly correct. A study of history of proration of the pool reveals the means to which operators have resorted in holding production to the market demand. The first restrictive measure was put into effect on September 12, 1929, 281 days after completion of the discovery well, when the Oklahoma Corporation Commission issued an order shutting down for 30 days all wells completed prior to September 12, 1932. On October 27, 1929, the pool was shut in for one day. Since that time proration has been based on the plans set out in the accompanying tabulation.

Period of Proration	Percentage of 24-Hour Pot. Allowed	Remarks
1929		
November 2—Dec. 1	60	Unequal intervals on time basis.
1930		
Dec. 1—Jan. 21	50	6 days out of 12.
Jan. 21—Feb. 26	25	3 days out of 12.
Feb. 26—Apr. 3	12.5	1½ days out of 12.
Apr. 3—June 26	16.67	2 days out of 12.
June 26—July 8	8.33	1 day out of 12.
July 8—July 24	0.00	All even wells shut in.
July 24—Aug. 9	8.33	1 day out of 12.
Aug. 9—Aug. 12	0.00	All wells shut in.
Aug. 12—Sept. 1	8.33	1 day out of 12.
Sept. 1—Oct. 7	5.55	16 hours out of 12 days.
Oct. 7—Nov. 4	2.78	8 hours out of 12 days.
Nov. 4—Jan. 3	1.39	4 hours out of 12 days.
1931		
Jan. 3—Feb. 11	1.00	
Feb. 11—Mar. 1	2.08	*6.25% Corporation Commission potential.
Mar. 1—Apr. 20	2.08	6.25% of C. C. potential.
Apr. 20—May 1	2.33	7% of C. C. potential.
May 1—June 1	2.00	6% of C. C. potential.
June 1—June 27	2.00	6% of C. C. potential.
June 27—July 1	3.33	10% of C. C. potential.
July 1—Aug. 1	2.67	8% of C. C. potential.
Aug. 1—Aug. 4	2.33	7% of C. C. potential.
Aug. 4—Oct. 10	0.00	Military shut down.
Oct. 10—Oct. 20	1.67	5% of C. C. potential.
Oct. 20—Nov. 1	2.00	6% of C. C. potential.
Nov. 1—Dec. 1	1.50	4.5% of C. C. potential.**
Dec. 1—Jan. 1	1.50	4.5% of C. C. potential.**
1932		
Jan. 1—Jan. 9	1.00	3% of C. C. potential.**
Jan. 9—Feb. 1	0.33	1% of C. C. potential.**
Feb. 1—Feb. 16	0.17	0.5% of C. C. potential.**
Feb. 16—Mar. 1	0.17	0.5% of C. C. potential.**
Mar. 1—Mar. 16	0.17	0.5% of C. C. potential.**
Mar. 16—Apr. 1	0.17	0.5% of C. C. potential.**
Apr. 1—May 1	0.67	2.00% of C. C. potential.**
May 1—June 1	0.70	2.1% of C. C. potential.**
June 1—July 1	0.58	1.75% of C. C. potential.**
July 1—July 15	0.58	1.75% of C. C. potential.**
July 15—Aug. 1	0.47	1.4% of C. C. potential.**
Aug. 1—Sept. 1	0.47	1.4% of C. C. potential.**
Sept. 1—Oct. 1	0.27	0.81% of C. C. potential.**
Oct. 1—Oct 16	0.27	0.81% of C. C. potential.**
Oct. 16—Nov. 1	0.33	1.00% of C. C. potential.**

* Corporation Commission potential is one-third of potential calculated on 24-hour basis.
**Additional allowable to water wells, Arbuckle lime wells, and flat allowable to all eligible wells.

Oklahoma City Well Gauges 153 Million Cubic Feet

Oklahoma City. — Phillips Petroleum Company's De Vore 1, NW NE SE SE Section 22-11n-3w, gauged 999 barrels of oil in two hours and was making gas at a gauged rate of 153,000,000 cubic feet, making it by far the largest gas producer in the relatively new southwestern portion of the Oklahoma City pool. Production is coming from Wilcox sand at 6420 to 6504 feet. Another completion which does not stand out for its initial production but which yields valuable information is Indian Territory Illuminating Oil Company's Wisel 1, CSW SE SE Section 26-11n-3w, in the same vicinity. Topping Wilcox sand at 6483 feet operators drilled to 6506 feet where the well made 183 barrels in 10 hours. It was then deepened six feet to 6512 feet, where it made 1850 barrels in 10 hours and gauged 18,000,000 cubic feet of gas. This portion of the pool has been very tricky and geological departments are not certain that they have it doped correctly. Several recent tests have been practically dry in the Wilcox sand. This performance on the part of Wisel 1 indicates that operators will do well to watch total penetration closely since apparently a major portion of the production is in the lower portion of the sand. In other portions of the pool maximum penetration of this great sand body does not seem in general to result in maximum initial production even with all things equal.

English Operator Leasing Near Hanover, Germany

Hanover, Germany.—"Mercurio," London, England, has been active in taking leases around Hildesheim, about 20 miles southeast of Hanover, in the communities of Sorsum, Gross- and Klein-Escherde, Emmerke, and Himmelstur, the acquisitions involving a total of 9375 acres, taken from about 350 land owners.

The above concern already had interests jointly with the "Preussag" (Preussiche Bergwerks and Hutten A.G.) in the Edesse field, near Berkhoepener Forst.

In the new leasing southeast of Hanover, the price per acre was about 75 cents. In that territory productive potash mines of the Wintershall and Burbach potash companies are located on salt domes. Drilling for oil by "Mercurio" in the territory is planned to be started early in 1933.

Beaumont, Texas. — Coastwise shipments of crude oil from Sun and Sabine Pass by Sun Oil Company during October totaled 1,288,367.67 barrels.

Oklahoma Field Developments

Company, Well and Location	Initial Production Bbls.	Depth
CARTER COUNTY—		
Schermerhorn, Dilly 14, se nw se 24-4s-3w	87	1768
CREEK COUNTY—		
C. G. Tibbens, Carter 5, cnl se nw 18-14-9e	6	1230
Pure Oil, Steele 3, swc 6-15-7e	¶41-600	3725
Jillson et al, L. Starr 1, se c nw 18-15-8e	309	3865
L. B. Jackson, Bankston 1, sw nw nw 26-18-8e	173	1369
Sidwell Drlg., McGee 2, ne sw sw 25-19-8e	5	2379
Swift & Grimes, N. Hall 2, swc se se 4-19-9e	¶¼	1280
Elliott Bros., W. Tiger 2, ne nw nw 20-19-9e	25	2293
Gled Oil, F. Boyd 4, nw ne nw 29-19-9e	50	2228
Johnson O. R., F. Boyd 5, se nw nw 29-19-9e	30	2374
Doke & Hughes, J. Boyd 1-A (Evans) se c ne 30-19-9e	10	2395
Holmes Oil, S. Deere 2, nw ne ne 36-19-9e	*	2342
HUGHES COUNTY—		
Burke-Greis, Chapman 1, swc nw 10-7-8e	367	2923
JEFFERSON COUNTY—		
Bridwell, Wahlgemuth 1, ne se nw 30-6s-5w	48	1485
LINCOLN COUNTY—		
Reserve Pet., Wickham 1, cse ne ne 11-15-7e	*	3773
OKLAHOMA COUNTY—		
Phillips Pet., Dobson 1, 219 ft from nl and 810 ft from wl se 22-11-3w, 2 hrs 14 min.	¶16½-1685	6535
Phillips Pet., Hunter 1, 791 ft from nl and 440 ft from wl se 22-11-3w	¶24-2072	6585
Phillips Pet., Kohout 1, 200 ft from nl and 1260 ft from el se 22-11-3w	¶60-1384	6495
OKMULGEE COUNTY—		
Harris-Hays, Creek Orphan Home 1-A, cnl sw sw 4-13-13e	*	2940
Pittinger, Bonner 9, nw ne nw 7-14-15e	*	1180
Rorabaugh-Ruddle, Grayson 1-A, cel sw ne 35-15-14e	20	792
PONTOTOC COUNTY—		
Stanolind O&G, Roberts 1, nwc ne 32-5-5e (owdd)	367	2923
POTTAWATOMIE COUNTY—		
Hilton Phillips, Bradshaw 1, swc se 21-7-4e	2701	4159
SEMINOLE COUNTY—		
Empire O&R, Lacy 5, cse sw sw 14-8-6e (owdd)	*	4557
Sinclair Prairie, Graham 1, nwc 10-9-5e (owpb)	5	4275
Sinclair Prairie, Baker 2, csw se ne 24-5-9e (owdd) (18 hrs.)	35	4326
Gypsy et al, Rentie 1, ne c 17-9-6e	419	4236
STEPHENS COUNTY—		
Geo. Pace, Allen 5, nec 3-2s-8w	*	2236
TULSA COUNTY—		
Hester et al, Barnett 1-A, ne se ne 1-18-12e	*	1520
W. H. Foster, Gregory 1-A, sw ne nw 23-18-12e	¶¼	800

New Operations

ATOKA COUNTY—E. B. George, Lowman 1, nwc sw 9-1n-15e.

CARTER COUNTY—Carter Oil, Burton 2, csw nw ne 21-1s-2w.

CREEK COUNTY — Lima Oil Corp., M. Starr 1, nwc se 18-15-8e. Helvie & Stout, Sango 1, se c nw 7-16-9e. Correction: Wood Oil, Baunsen 1, cne sw ne 3-18-8e (formerly reported Smith et al, Baunsen 1. J. E. Crosbie, Escoe 1, nwc sw 26-18-8e. Samples & Mann, L. Hutton 1, sw se se 5-18-9e. E. L. Robinson, Collins 2, ne c 26-19-8e. Johnson O. R., C. Carolina 1, ne sw ne 1-19-9e. National Ref. Futrell 10, ne nw se 1-19-9e. Porter et al, W. Mann 1, sw se ne 7-19-9e. Samples & Mann, R. Tucker 3, nw sw sw 17-19-9e. Gled Oil, Sutton 1, nec se 30-19-9e.

HUGHES COUNTY—Boettcher, Jacobs 2, se c 9-7-8e. P. & R. and Sinclair Prairie, Narcomay 1, cnw se sw 9-7-8e (owdd). Phillips Pet. Jacobs 1, ne c 16-7-8e. Radial Oil, Diamond 2, nwc 23-7-8e. Iglehart et al, Smith 2, cne se se 28-9-10e. Corrections: Pringle & Marshall, Narcony 1, swc 10-7-8e. formerly reported J. E. Crosbie No. 1, and E. A. Felmee, Chipco 1, cnw sw nw 15-7-8e. formerly reported Limestone O&G.

JEFFERSON COUNTY—Southern Oil, W. Seay 7, se nw se 3-7s-5w.

LINCOLN COUNTY — Corrections: Elm Oil, Strip 2, ne c sw 1-15-6e, formerly reported Henry et al, Strip 2.

MUSKOGEE COUNTY—Boyle, Russell 8, cnw se se 19-15-16e.

OKFUSKEE COUNTY—Steckol, 1-A, ne c 21-11-11e. Turney & Avers, Barnett 1-A, sw se sw, 25-11-11e.

OKLAHOMA COUNTY — Phillips Pet. Stamper 1, 837 ft from nl and 1174 ft from lse 22-11-3w. Phillips-Shell, Berg 2, cne nw sw 26-11-3w. Correction: Gulf Prod. Medders 3, 1105 ft from nl and 105 ft from wl se 22-11-3w, formerly reported Phillips Pet. No. 1. Correction: Inland Development, Corsicana 2, 530 ft from nl and 434 ft from wl se 22-11-3w, formerly reported Phoenix Oil, Richolson 1.

OKMULGEE COUNTY—Cusack, Scott 7, csl nw se 15-13-14e. W. B. Pine, Smith 1-A, se sw nw 27-14-13e. Babcock, Starr 1-A, cel se ne 2-14-14e. Denton & Marshall, Colbert 3-A, nw sw nw 14-14-14e. R. Vincent, Cable 1-A, ne se se 18-14-14e. Taylor et al, Checote 1, se ne sw 20-15-13e .

OSAGE COUNTY—Correction: Wacula Oil, 1, nw ne nw 26-27-11e, formerly reported sw se nw.

PONTOTOC COUNTY—E. A. Mason, Jordan 1, csw nw nw 28-5-5e.

POTTAWATOMIE COUNTY — Watchorn, Lowery 1, cne se ne 30-6n-5e.

SEMINOLE COUNTY — Sovereign Oil & Pure Oil, Coker 1, csw se ne 2-8-5e.

STEPHENS COUNTY—Mudge Oil, Woods 25, nw se nw 26-1s-5w. Geo. Pace, Peck 1, nwc sw 32-2s-6w.

TULSA COUNTY—Correction: Johnson O. R., L. Davis 1-A, sw ne se 19-19-10e, formerly reported in 19-20-10e. A. J. Pettis et al, Childers 1, se nw nw 11-17-14e.

Wildcat Drilling Report

(Wells shut down not included)

KAY COUNTY—Crawford & Long, Richards 1, sw nw, 9-25-1w, sd 285 ft. Lewis et al, Harris 1, se nw, 14-25-1e, abn lcn.

GARFIELD COUNTY—Love et al, White 1, se nw 9-24-6w, Layton 4480-4517 ft hfw, 4730-40 ft wtr, sand 4770-4800 ft, Bartlesville 5522 ft sw, 5566-70 ft S.G., 5-inch 5580 ft, 5820-5825 ft S. S. O., td 5850 ft, pulled 5-inch and 6 inch casing.

PAWNEE COUNTY — Deep Rock et al, Crow 1, ne se 26-23-5e, rog.

NOBLE COUNTY—Lacy Rollins et al, F. Frank 1, se sw, 6-20-2w, rig. Stanolind-Ameranda, Kolb 1, cne nw 33-20-2w, dr 1730 ft.

LOGAN COUNTY—Eason Oil, Gun Club 1, nw ne 10-16-4w, td 5161 ft, sd.

CREEK COUNTY—O. O. Owens, Fee 1, nwc, 23-15-7e, sand 1206-54 ft hfw, repairing engine.

OKLAHOMA COUNTY—Carter Oil et al, Shawbell 24, csw ne 1-12-4w, cored sand and lime 5092-5180 ft, cored sand 5515-5534 ft, no show, dr 5567 ft.

LINCOLN COUNTY — Sovereign et al, Flowers 1, sw se se 14-12-3e, dr 5210 ft in Mayes lime.

SEMINOLE COUNTY—Donley et al, Shepard 1-B, se ne, 4-8-8e, sd 1270 ft for orders.

PONTOTOC COUNTY — Blackwell O&G, Abbott 1, nw sw ne, 14-4-6e, td 1040 ft, sd for orders. Sunray, Grant 1, cse ne 11-4-8e, S. 2680-2700 ft hfw, td 2796 ft, sd for orders.

GRADY COUNTY — English Drlg. Co., Heenan-Coe 1, ne se ne 32-3-7w, pumped 15

bbls oil, 100 bbls wtr, pulled tubing preparing to deepen.

PONTOTOC COUNTY — Williams, Kroth 1, ne se 33-3-4e, td 1543 ft, fsh tools. Delaney, Harden 1, ne sw 30-2-7e, dr 447 ft.

COAL COUNTY—Fink & Russell, Miller 1-A, se ne 10-2n-8e (owdd) dr 2730 ft. Dodd & Burton, Grigsly 1-A, nw se ne 35-1n-8e, dr 350 ft.

ATOKA COUNTY—Barton et al, Miller 4, se nw se sw 26-1n-14e, sdy sh 275-302 ft, S. O., S. 302-8, dr 496 ft. Hicks Oil, Morris 2, se ne nw se 5-1-15e, S 69-155 ft, est 2 bbls 40 gravity oil. Hicks Oil, Morris 2-A, se ne nw se 5-1-15e, sand 160 ft td. George, Reddin 1, sw ne sw 19-1n-15e, sd 640 ft.

JEFFERSON COUNTY — Bridwell Oil, Wolghamuth 1, nw ne se nw 30-6s-5w, oil sand 1478-85 ft td, 48 bbls. comp.

MARSHALL COUNTY—Lee Cross, Hamlin 1, se sw sw, 26-6s-5e, dr 480 ft. Thomas et al, Setliff 1, sw se se sw, 36-5s-6e, dr 380 ft wtr sand.

ATOKA COUNTY — L. E. Stewart et al, Stewart 1, sec ne 2-4s-10e, dr 290 ft.

STEPHENS COUNTY—California Prod. & Oper., Garrett 1, se ne se, 11-3s-6w, td 325 ft, sd (perfecting titles). California Prod. & Oper., Sitton 1, ne se sw 12-3s-6w, rig.

ATOKA COUNTY—Brookshire et al, Guinn 1, nwc 18-3s-10e, td 3265 ft, sd, rigging small string by tools.

STEPHENS COUNTY — Gillette Bros., Cooley 1-A, nw se nw, 17-2s-8w, sd 580 ft for repairs. George Pace et al, Peck 1, nw sw 32-2s-6w, rig.

ATOKA COUNTY—Malarnee et al, D. K. O. Land Co. 1, ce½ se 35-2s-13e, sd 704 ft, est 3 bbls, sd. Malarnee et al, D. K. O. Land Co. 2, cse se, 35-2s-13e, td 25 ft, sd.

Ritz-Decker-Garrett Area Given Increased Allowable

Wichita, Kan.—Due to increased nominations operators in the Ritz-Decker-Garrett area of McPherson County received an increase in allowable from 8.6 per cent to 10.2 per cent on all Viola lime wells, except those receiving minimum allowable, and from 7.6 per cent to 9.2 per cent on all chat wells excepting those receiving full production or minimum allowable.

By order of the Public Service Commission, operators started taking new potentials for the area on November 10. As soon as these are completed and calculations made, the umpire's office will announce adjustments in allowable percentages based on the new potentials. As of November 1, 104 Viola limestone wells were estimated to have a daily potential of 108,031 barrels, and 67 chat wells, 48,725 barrels, making a total of 156,756 barrels. In the former group, 13 wells were receiving the minimum allowable of 50 barrels per day in lieu of taking potentials, and in the latter, 57 of the total of 67 wells, were taking either full production or minimum allowable. Olson Oil Company's Keohn 2 and Shell Petroleum Corporation's Lovett 3, were off production being reconditioned. Lario Oil & Gas Company's Ritz "A" 1, was deepened to Viola lime and abandoned and Wolf Creek Oil Company's Krehbiel 2, was reclassified after making a producer in Viola lime. It is believed that the new potentials will bring about considerable change in allowables for the various leases.

KANSAS FIELDS

Wilcox Sand Producer in Ritz Pool Deemed Freak and General Deepening Campaign Not Expected to Follow.

FLOYD SWINDELL, *Staff Representative, Tulsa, Oklahoma*

Ritz Wilcox Well Will Not Start Deepening Campaign

Wichita, Kansas.—Tom Palmer et al's Winn 3, CSE SE NW Section 7-20s-1w, which attracted attention last week when it found what is apparently the first commercial production from the Wilcox sand in the area, produced 996 barrels in 24 hours, pumping 41 barrels the last hour through 2½-inch tubing at 32 strokes per minute. It was completed originally in February, this year, making initially 1278 barrels from Viola limestone at 3397 to 3405 feet. New production is from Wilcox sand topped at 3438 feet with pay at 3440 to 3443 feet, the total depth. This formation has been tested at several strategic points in the area and had not yielded commercial production. For that reason the new well is being considered a freak and is not expected to precipitate any considerable amount of deepening of the wells in the Ritz pool.

Phillips Petroleum Company was building derrick for No. 1, CNE SE NE, Section 30-23s-2e, 4½ miles east of Newton and about a mile east of a 3025-foot dry hole in eastern Harvey County. This is the second recent wildcat test for this portion of the county, the other, Herndon Drilling Company et al's Santa Fe 1, SE NW SW Section 19-23s-1e, having been abandoned at 3637 feet after testing Arbuckle "siliceous" lime at 3627 feet to the total depth.

Sinclair Prairie Oil Company has announced location for No. 1, SE SE SW, Section 1-17s-10w, two locations west of Aylward et al's Stratmann 3, in the Stratmann pool of southwestern Ellsworth County. The pool, with 10 producing wells and an estimated potential of 16,607 barrels, is now allowed a daily production of 1661 barrels, or 10 per cent of its potential. New gauges were commenced November 15 and the allowable percentage probably will be revised at an early date. Derby Oil Company et al's Ploog 1, CNE NW SE, Section 12-17s-10w, in the same area, is a dry hole at 3329 feet after testing Arbuckle "siliceous" lime topped at 3303 feet. The test was completed with rotary tools.

Albert Austin et al were plugging back to test the chat horizon at 3965 to 3970 feet in Foy 1, CSW SE SE, Section 14-34s-1w, wildcat test slightly over two miles north of South Haven in southern Sumner County. Operators encountered sand, probably Wilcox, at 4303 feet and had a hole full of water at 4319 feet. It was drilled to 4348 feet, still in the sand.

The Texas Company was swabbing at the rate of about 25 barrels per hour from No. 1, CSW SE SW, Section 21-21s-3w, in the south extension to Voshell. Top of the Wilcox sand was reported at 3424 feet and pay sand at 3431 to 3435 feet. At 3437 feet, operators had 1000 feet of oil in the hole during the first hour. Deep sand production is now allowed to produce 60 per cent of its potential and the chat area 100 per cent under a recent order which classified the pool into two zones.

Although no verification has been made it is rumored that Skelly Oil Company will soon announce a location in Section 4-26s-8w, on its block in southern Reno County.

L. R. Flori Company of St. Louis is now exclusive mill representative in the Southwest for the tubular products of Alleghany Steel Company of Pittsburgh. Warehouse stocks are carried in St. Louis. The company also maintains a branch sales office in Tulsa in charge of Roy D. Gwynne.

Kansas Field Developments

Completions

Company, Well and Location	Initial Production Bbls.	Depth
COWLEY COUNTY—		
Deal Oil, Cavilt 1, se sw se 22-32-4e	100	2346
GREENWOOD COUNTY—		
Goodwin, 1, cnw sw 30-24-13e	*	1822
Hatfield et al, Lindmood 1, cnw ne sw 7-25-13e	50	1602
HARVEY COUNTY—		
Liggett et al, Watton 1, csw se ne 7-24-1e	*	3577
McPHERSON COUNTY—		
Derby Oil, Sadey 2, cse sw 2-19-2w (owdd)	¶21	2977
Breslin, Hill 1, se c 27-19-2w	75	2962
Sinclair Prairie, D. J. Stucky 1, se c 28-20-3w	974	3422
SEDGWICK COUNTY—		
Kiskaddon, Schoat 1, cse sw ne 24-27-1e (owdd)	*	3341

WOODSON COUNTY—

McGinnes, Schaffer 2, sw ne sw 31-23-14e . ..... • 1758

Theta Oil, Schaffer 9, nw sw se 31-23-14e 200 1581

New Operations

GREENWOOD COUNTY—Davison et al, Frankhouser 1, cne nw nw 28-22-12e. Young et al, Coffman 1, csl ne 10-24-12e. Absher-Rex, Hughes 1, ne c se 26-24-12e. Ozenbouger, Haber 1, swc nw 6-25-11e. Morris et al, Smith 1, cse sw nw 7-25-1e. Correction: York State, Jay 1, csw se se 11-23-11e, formerly reported se c.

McPHERSON COUNTY—Correction: Palmer-Phillips, Winn 2, se c nw 7-20-1w (owdd) formerly reported No. 3. Gypsy Oil, Kinney 3 (owdd), cnw sw sw 34-20-3w. Gled-Shell, Wall 1, cnw ne se 21-21-3w. Gled-Shell, Sperling 1, csw ne ne 28-21-3w.

SEDGWICK COUNTY—Graham Bros. et al, Rapp 1, ne c 21-26-2e (owdd), td 3305 ft sd.

WOODSON COUNTY—Theta Oil, Schaffer 10, sw nw se 31-23-14e.

Wildcat Drilling Report

(Wells shut down not included)

SUMNER COUNTY—Austin et al, Foy 1, sw se se 14-34-1w, dr 4230 ft. Trees Oil & Shell, Springate 1, ne se sw 6-34-2e, td 3639 ft, fsh.

COWLEY COUNTY — Roth and Faurot, Craig 1, se c 2-32-3e, dr 992 ft.

SEDGWICK COUNTY—Cameron & Great Basin, Landson 1, cse nw 13-28-2e, sand 3250 ft hfw, dr 3264 ft in sand.

PRATT COUNTY—Ninnescah O&G, Hardesty 1, sw se se 28-27-11w, td 3225 ft, ur 6 inch.

BUTLER COUNTY — Ramsey, Michael 1, sw nw nw, 18-27-3e, td 2927 ft, ur 6 inch.

RENO COUNTY—T. L. Johnson, Crotts 1, ne nw ne, 27-26-10w, spd and sd.

FINNEY COUNTY—Joe Denham, Brown 1, csw, 16-25-34w, dr 1300 ft.

FORD COUNTY—Swaim et al, Henthorne 1, cnw, 21-25-24w, T. Sil. 5669 ft no show, 5772 ft hfw, td 5782 ft.

EDWARDS COUNTY—Mid-Kansas, Converse 1, sw ne ne 30-24-18w, dr 5236 ft.

HARVEY COUNTY—Folkner et al (formerly Liggett et al), Davis 1, sw se ne 7-24-1e, td 3577 ft, D&A.

GREENWOOD COUNTY—York State, Joy 1, se c 11-23-11e, dr 800 ft.

MARION COUNTY—Darby et al, Pankratz 1, nw se 5-20-1e, T. Viola 3287 ft, ur 6 inch.

NESS COUNTY—Sinclair-Prairie, Wilhelm 1, csw sw 16-19-21w, rur.

BARTON COUNTY—Skelton et al, Ott 1, cse se 16-19-14w, td 3605 ft sd.

RICE COUNTY—Ramsey et al, School lot 1, nw sw nw 32-19-9w, td 2600 ft, sd.

McPHERSON COUNTY — Aldrich et al, Stromquist 1, sw se se 2-19-3w, lcn. Bailey-Carlson et al, Carlson 1, se c 4-19-2w, dr 2842 ft. Swartz et al, Benson 1, nw ne se 12-19-3w, lcn. Whan et al, Nelson 1, nw se 18-19-2w, lcn.

MARION COUNTY — Vernon-United Pet., Schmidt 1, sw nw 35-19-1e, 2025 ft hfw, 8-inch 2035 ft, dr 2112 ft. Farrell et al, Williamson 1, cnw se 21-19-4e, sd 1015 ft.

BARTON COUNTY—Smith, Ash et al, Wilson 1, cnw sw 13-18-14w, dr 3122 ft. Ranken et al, Sooey 1, csw ne 34-18-12w, rig. Sinclair-Prairie, Turgeon 1, cne nw 3-16-12e, ru.

ELLSWORTH COUNTY—Brimm et al, Horousi 1, sw se ne 17-16-10w, lcn. Raymond Gear & Hannah, Kroboth 1, se nw 12-15-10w, (skidded rig 17 ft south), dr 440 ft. Sinclair Prairie, Malir 1, cne ne 27-15-8w, lcn. Bickford, Burke 1, cnw sw 14-14-9w, spd 50 ft and sd. Gurley Bros. & Barnsdall, Union Pacific 1, nw sw, 7-14-7w, td 2245 ft sd.

DICKINSON COUNTY—Severs et al, Livingood 1, se nw, 13-13-2e, (owdd) td 4900 ft, sd.

GRAHAM COUNTY — Schleimeyer et al, Smith 1, se c 24-8-25w, td 3615 ft, recementing 8-inch.

ROOKS COUNTY—Boysen et al, Silvers 1, cne 21-8-19w, (owdd), td 3474 ft hfw, pb to 3463 ft, ru to test.

NORTH and WEST TEXAS

Area Has Prosperous Week With Good Wells Extending Production; Acid Dosage Again Proves Efficiency.

H. H. KING, *Staff Representative, Fort Worth, Texas*

LeFors Section Still Main Source of Panhandle Oil

Pampa, Texas. — Installation of a string of 6⅝-inch pipe with packer at 3110 feet, or 20 feet off bottom, greatly reduced the gas production and cut the oil flow about one-third in Cree-Graham and Hoover's J. B. Barrett-Skelly 1, located in semi-virgin territory in western Gray County. This well was reported last week making 20 barrels oil hourly and gas at rate of 15,000,000 cubic feet daily from pay topped at 3130 feet. The oil flow dropped to seven barrels hourly after running pipe. The well is to be deepened.

The LeFors section, Gray County, continues to be the major source of new oil production in the Panhandle, with Skelly Oil Company and The Texas Company commanding a big share. The Texas Company's M. A. Shaw 5 was flowed 80 barrels of oil per hour while drilling ahead in granite wash formation at 2696 feet, having encountered first oil flow at 2675 feet. It has a surface elevation of 2771 feet. Skelly Oil Company's G. H. Saunders 7, an east off-set, flowed 55 barrels oil hourly after logging three pay zones in the granite wash section at 2680-85, 2718-85 and 2755-58 feet, but will install a gas lift to try for a larger flow. It has a surface elevation of 2772 feet. A flow of 15,000,000 cubic feet of gas at 2542-50 feet has been cased off.

Fisher County Production Extended by Big Well

San Angelo, Texas.—Ranking as one of the largest oil completions in Fisher County, the semi-wildcat test of the Southern Oil Corporation (Sam Yingling), Fort Worth, on the E. A. Pardue land tested 350 barrels of 37 gravity oil during first two-hour gauge from soft lime at 3104-05 feet. This large producer extended the producing area one mile to the north, and is located near the southeast corner of Section 202, Block 1, B.B.B.&C. Ry. survey. The production test was limited to the above gauge owing to all available lease tankage having been filled.

Southern Oil Corporation has 320-acres surrounding the extension well, and will drill a north offset shortly. Negotiations are now pending for a market outlet with independent refiners in the district.

Cranfill-Reynolds Company's George 1, located about one mile south of the above producer and offsetting pumping wells in the regular lime, has been drilled to 6307 feet.

Gulf-O'Brien East Side Completion Is Prolific

San Angelo, Texas.—A prolific well on the east side of the Gulf-O'Brien field, Ward County, was developed last week when Gulf Production Company's Hutchings Stock Association 13 produced 2000 barrels of 34.6 degrees gravity oil and 4,000,000 cubic feet of gas during first 24 hours after striking a soft spot in the lime horizon at 2662-65 feet. The well was deepened to 2685 feet without any appreciable production increase, and will be completed at that depth after installing tubing so as to obtain a balanced gas-oil ratio. Derrick has been ordered erected for Hutchings 15 to be an east off-set to Hutchings 13, which is on the west line of Section 5, Block "F". Drilling is in progress below 1800 feet on Hutchings 14, an offset to Renaud & Prettyman's University 1, which recently extended production in the field to the southwest.

A string of seven-inch pipe has been ordered set at 3640 feet on the Ector County wildcat test of L. C. Harrison-Turner et al on the F. V. Addis ranch as result of 2,000,000 cubic-foot flow of sweet gas from sandy-lime at 3733-36 feet. This test is showing some salt water from above the gas source, and now has a depth of 3780 feet. It is located near the center of the north line of NW Section 35, Block 43, T&P Ry. Survey, T-2-S, and 1¼ miles east of a failure completed on the Cowden ranch recently by Bert Weekley, Casteel and McCurdy after drilling to 4375 feet. The latter started an aggressive lease and royalty play along a north and south trend to the east, and Humble Oil & Refining Company has expended more than $100,000 for royalty and additional lease protection. Stanolind Oil & Gas Company holds a 10-section block beginning with the north line of the Addis drilling site.

No production has been encountered

by Big Lake Oil Company's University 1-C, Big Lake field, in deepening from the regular Ordovician lime pay to 9271 feet. The scheduled Ordovician lime test on a unitized wildcat block of leases underway in Crockett County by Stanolind Oil & Gas Company et al on the Todd ranch was still in shale late last week at 6788 feet.

Stephens County Well Responds to Acid Dose

Breckenridge, Texas. — Acid treatment of Sinclair Prairie Oil Company's A. A. Atkins 6, NE Section 19, Block 2, S.P.Ry. survey, Stephens County, caused the oil production to increase from one barrel to an average of 60 barrels daily for the first five days after the use of 1000 gallons of the rejuvenating fluid furnished by the Chemical Process Company, Breckenridge. This well was completed in lime at 3185-3218 feet in February, 1922. Scores of wells producing from the Caddo lime series in West Central Texas have been converted lately from small stripper pumpers to profitable producers through the use of chemical solution, and a premium price is now available for virtually depleted leases that obtained oil from the lime horizon.

A mile extension to the productive limits of the Cook Ranch field, Shackelford County, was made to the northwest with completion of Roeser-Pendleton, Inc., and Continental Oil Company's Cook 2-A, Section 112, making 2,750,000 cubic feet gas from sand at 1137-40 feet. The well has a closed in rock pressure of 350 pounds.

Scurry County Geology Encourages Testing

San Angelo, Texas. — Supported by favorable geology, a wildcat block centering on the Clarkson ranch in northwestern Scurry County is to be tested by W. S. Guthrie-Coffield et al, with drilling scheduled to start by the end of the current week. Clarkson 1 is located at the CSW Section 243, Block 97, H&TC Ry. Survey. Magnolia Petroleum Company is a large lease owner in this section of the county.

Atlantic Oil Producing Company has turned its block of leases in eastern Reagan County to J. P. Williams et al, who will drill J. R. Scott 1, SWC NW Section 179, Block 1, T&P Ry. Survey, or about two miles east of Westhyde Investment Company's Scott 1, which is credited with having registered a show of oil in lime before plugging at 2854 feet. A test for the Stiles community, Reagan County, is slated to be drilled shortly by The Texas Company on a seven-section block. Location has not been made, but it is understood that the drilling will be contracted to 3250-foot level, with provisions made for the hole to be sufficient diameter at the latter depth to land a string of 8¼-inch pipe so as to be prepared to make an Ordovician lime test later on.

Shackelford County Field Extended by Large Gasser

Breckenridge, Texas.—Production in the Cook Ranch field, Shackelford County, has been extended about one mile to the northwest by completion of a 2,750,000 cubic foot gasser in sand at 1137-1140 feet by Roeser-Pendleton, Inc., and Continental Oil Company's Cook 2-A, located in Section 112, E. T. Ry, survey. This gasser has a closed in rock pressure of 350 pounds. The first test drilled on this lease several weeks ago was abandoned as a failure at 1601 feet.

North and West Texas Field Developments

NORTH TEXAS

Completions

Company, Well and Location	Initial Production Bbls.	Depth
ARCHER COUNTY—		
Consolidated Oil Co., M. B. Ray 1	*	1130
Frank Darr et al, L. F. Wilson 1 ..	*	1519
J. P. Harris et al, W. L. Andrews 1	*	100
Hawkins & Holcomb, Purcell-Gulf 1	*	1245
Albo Minnich et al, Wilson 6.....	3	1080
BAYLOR COUNTY—		
C. G. Hart et al, Stephens 1	*	1323
JACK COUNTY—		
McKee Drlg. Co., J. T. Hunt 2....	*	605
M. H. Williams et al, Singleton 1..	*	908
WILBARGER COUNTY—		
Davis Oil Corp., Waggoner 1-B ..	25	2414
Texas-State Oil Co., Flanniken 1..	70	1462
The Texas Co., W. T. Waggoner 107-A	9	1041
YOUNG COUNTY—		
Mel Armstrong et al, Spearman 1..	*	651
W. B. Hamilton et al, Jeffreys (Sec. 43) 1	*	864
Nash & Windfohr, J. W. Atwell 1 . .....¶5-175		3889
E. D. Willis et al, Larimore (Sec. 253) 1	*	756

WEST CENTRAL TEXAS

Completions

Company, Well and Location	Initial Production Bbls.	Depth
SHACKELFORD COUNTY—		
Roeser-Pendleton, Inc.-Continental Oil Co., Cook 1-A, Sec. 112.....¶2½		1140

WEST TEXAS

Completions

Company, Well and Location	Initial Production Bbls.	Depth
GLASSCOCK COUNTY—		
B. C. Mann et al, Lay Powell 1..	*	3262
HOWARD COUNTY—		
Merrick & Lamb, Otis Chalk 5....	105	1787
JONES COUNTY—		
C. S. Spelling et al, Mrs. L. Murray 1	*	2030
WARD COUNTY—		
Gulf Prod. Co., Hutchings 13 ...¶4-2000		2665
Stanolind O&G Co., M. Weiss 2....	90	2375
M. Weiss 3	70	2386

TEXAS PANHANDLE

Completions

Company, Well and Location	Initial Production Bbls.	Depth
GRAY COUNTY—		
Nabob O&G Co., J. S. Morse 1-E...	*	3000
The Texas Co., Wm. Jackson 2-B..	350	3180

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EAST CENTRAL TEXAS

East Texas Field Has About Produced an Eighth of Its Expected and Oil Well in Gas Area Adds More Length.

H. H. KING, *Staff Representative, Fort Worth, Texas*

Oil Well in Gas Area Makes Field Forty Miles Long

Tyler, Texas.—Conversion of Wemack Oil Company's gasser on the extreme south end of the East Texas field into an oil producer rated above 500 barrels daily on open flow from Woodbine sand at 3689 feet is to attract more drilling in the immediate area. Appearance of oil in this outpost co-incident with a sharp drop in gas volume and rock pressure indicates that the gas area will soon become exhausted, but oil is apparently finding its way into the porous sands rom the north as the head is removed from the gas horizon. Wemack Oil Company's J. G. Arnold 1, Wm. Christian Survey, was completed early last May rated at 50,000,000 cubic feet of gas daily at 3677-89 feet, or 3302 feet below sea level. A connection with a commercial line serving the field proper was obtained recently after considerable delay, and only a small volume of gas had been sold when the transformation took place. Assuming that the mile stretch of acreage separating this well from nearest oil wells will yield oil, the East Texas field can claim an overall length in a northeast to southwest direction of 40 miles.

Stanolind Oil & Gas Company's J. W. Ashby 1, located in northwest corner of lease, M. Walker Survey, and near east side of the oil production in the south portion of the field, was drilling below 3800 feet in hard gray shale to determine the top of the Georgetown line for geological information after testing salt water in sand at 3728-40 feet. This failure has a surface elevation of 398 feet, and logged only about 18 inches of saturated sand at the level where production was due when correlated with flowing wells to the west and northwest. Poor sand conditions were blamed for the failure as the location was considered a sure-shot for oil or gas. The fact that salt water was found near the east shoreline, although absent in the east portion of the Joiner and Longview sections of the field, has aroused comment. Salt water has been appearing regularly on extreme east side wells in the original Kilgore area, but some operators have been contending that same was due to faulty casing seats and defective casing, or because of wells having been shot.

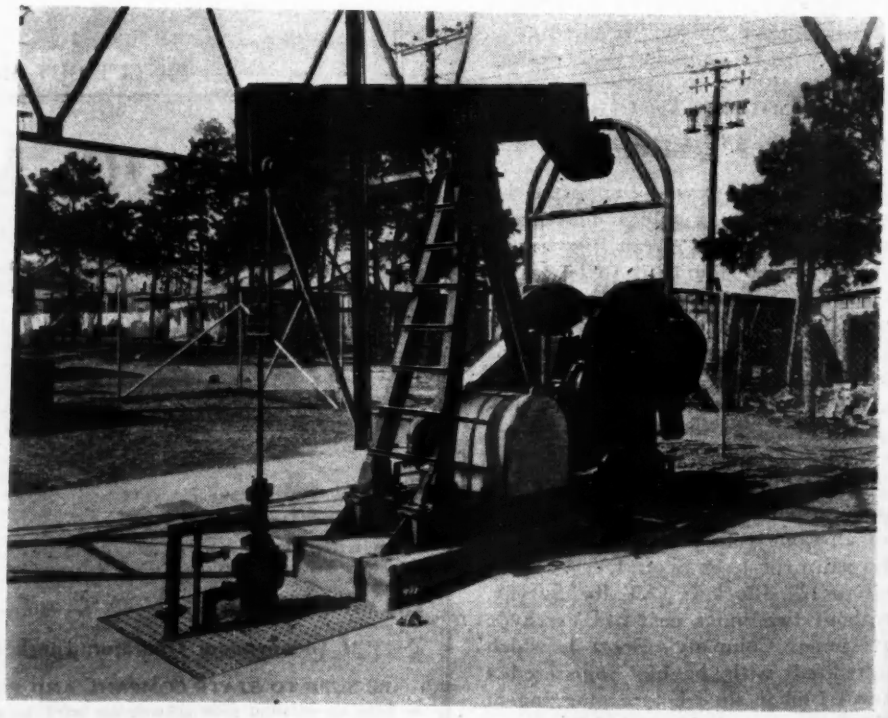
Prior to the abandonment of Simms Oil Company and Frank Buttram's W. R. Nicholson 14, which was reported last week as having tested salt water at a sub-sea depth of 3309-14 feet, the hole was deepened to 3705 feet, or 3334 feet below sea level, for information. Coring of the Woodbine revealed two sand sections at 3680-85 and 3702-05 feet, with red beds in between. This failure is the furtherest northwest location drilled on the 800-acre lease in Upshur County, and the odd feature is that it made salt water at the same level sub-sea that the nearest producer to the east is flowing pipe line oil.

Two failures for the east flank of the Longview section of the field have been completed by independents in over-stepping the deadline for oil production. A. M. Landes and others' Smith 1, R. Slaughter Survey, failed to find sand after drilling through cap rock at 3586-90 feet, and quit in Georgetown lime at 3682 feet. T. D. Humphrey of Tyler and associates' F. P. Branson 1, located near northwest corner of the D. Meredith Survey and close to several dry holes, quit in shale at 3645 feet after testing dry on drill stem test at 3580-3632 feet. On the opposite side of the field and in Upshur County, Cranfill-Reynolds Company has turned its three small leases on the J. Williams land, McKinney-Williams Survey, with four completed wells, to the Waggoner & McConnell Agency. The consideration consists largely of an over-riding royalty.

Field work is now near the low level for the year, and about 50 per cent below the peak, with 410 operations listed. However, there are only about 208 active tests in the above total. The most active companies are listed in the table below:

Field Operations of 12 Leading Companies in East Texas

Company—	Lcns.	Rigs & Derricks	Active Tests	Total Operations	Completed Wells
Humble Oil & Refining Co..	1	6	28	35	838
Mid-Kansas Oil & Gas Co...	2	26	5	33	241
Magnolia Petroleum Co.	7	10	5	22	382
Shell Petroleum Corp.	.	5	12	17	291
Atlantic Oil Prod. Co. et al	3	11	1	15	350
Sun Oil Co. et al.....	4	4	7	15	299
The Texas Co.	1	6	3	10	165
Gulf Production Co. et al.	2	3	6	11	584
Sinclair Prairie Oil Co.....	1	4	9	14	461
Tidal Oil Co.	3	1	4	8	278
Stanolind-Pure-Simms et al.	1	3	5	9	265
Hunt Production Co.	.	2	3	5	143



A Late Type of Pumping Unit On a Lease of Tidal Oil Company in the East Texas Field.

Church Leases Indicate East Texas Religious Area

Tyler, Texas.—Judging from the number of separate oil producing leases on church lots in the East Texas oil field one might assume that it is an extremely religious section of the state. The latest monthly production report compiled by employes of the Texas Railroad Commission reveals that there are 24 producing leases identified as church lots. Only a few of the churches have sub-divided their lots, so the figure represents almost that many separate churches. Nearly every church denomination is represented, and sharing in the earnings derived from royalty interests, with some enjoying sufficient revenue to be almost self sustaining. Negro churches scattered through the farming communities existing prior to the invasion of the drilling rigs are particularly in large numbers.

School lots have likewise proven popular with the operators, and there are 17 separate producing leases on school sites now contributing royalty payments towards the education of children in the five counties sharing in the production of the largest of large fields.

There are four chapel sites participating in production from a like number of leases, and five lodges. Several cemeteries have likewise been invaded by the rotary drill to perform double duty in serving the living as well as the dead.

Excitement Premature In Leon County

Tyler, Texas. — Recovery of sand cores carrying oil saturation near the 6000-foot level in the wildcat test of Shell Petroleum Corporation et al on the Wm. Phillips farm, Leon County, about 40 miles southeast of Mexia, proved to be a false threat of an oil strike in the south portion of the Woodbine sand belt in Central East Texas. The sand was encountered immediately below the thick body of hard Eagleford shale, and was followed by more shale. A drill stem test at 5998 feet, with the tool set 36 feet off bottom, failed to yield oil or gas from sand and broken sand logged at 5983-91 feet, and the test was logging shale at 6025 feet late in the week.

This Leon County wildcat is exploring a 17,500-acre block centering on a core drilled structure leased about three years ago by J. R. Black and the late Robert R. Penn as result of geological work performed by John Deering and Heath M. Robinson, Dallas. A half interest was sold to Shell Petroleum Corporation, and the remaining half has been distributed among eight separate companies. It is considered to be similar in type to the Van structure, except that the latter's faulted condition is absent.

The top section of the Woodbine series has proven dry in the Anderson County wildcat of W. H. Roeser et al on the J. B. Hanks land, Anderson County School Land Survey, and if production is obtained it will come from below the red beds. This wildcat logged top of the Woodbine series at 4774 feet after passing through Austin chalk at 4210-4444 feet, and at 4940 feet was in sand, lignite and sandy-shale formation. It has a surface elevation of 449 feet, and is checking about 80 feet higher than a nearby test when correlated on the lower key formations.

East Texas Field Already Has Produced Its Royalty

Houston, Nov. 15.—Several weeks before the current year comes to an end the big East Texas field will apparently have to its credit definitely the first one-eighth of the two billion barrels of crude oil production which it is expected by geologists and engineers to give up ultimately.

Although only two years old, and despite the fact it has been under strict proration, the field had produced through November 8, 212,623,287 barrels of oil. Producing currently around 350,000 barrels daily, or roughly 2,500,000 barrels weekly, the area promises to pass the one fourth billion barrel mark within about five weeks.

Figures covering production in the field during the week ended November 8, showed average daily production to be 351,006 barrels from 8785 wells.

Production by years in the East Texas area since its discovery late in 1930 has been as follows:

	Barrels
1930	21,952
1931	106,505,354
1932 through Nov. 8	106,095,981
Total	212,623,287

East Texas Field Shipments More Than Current Output

Tyler, Texas.—Production in the East Texas oil field averaged 350,835 barrels daily from 8785 flowing and pumping wells during the week ending November 9. During this period shipments by trunk lines from the field averaged 324,625 barrels daily, while deliveries to local refineries aggregated 29,800 barrels, with tank car shipments reported as averaging 18,200 barrels daily. Tabulation of these various crude outlets would indicate a withdrawal from storage of about 21,800 barrels daily, as compared to a withdrawal of 16,250 barrels daily average the previous week.

Not one of the 14 trunk line units serving the field has a capacity load, and it is quite probable that more than 50 per cent of the available pipe line outlet will remain inactive as long as proration remains in effect. In addition to the 14 trunk lines there are two other outlets that tie into trunk lines some distance from the field, and one that delivers to a refinery and tank car rack at Tyler. These are classed as stub lines.

Current Crude Movement From East Texas

Company—	Destination or Pipe Line Junction	Daily Capacity	Average Daily Shipments
Humble Pipe Line Company	Baytown	60,000	33,825
Humble Pipe Line Company	Moore Sta. (La.)	45,000 (*)	19,600
Magnolia Pipe Line Company	Beaumont	60,000	32,750
Magnolia Pipe Line Company	Center Sta.	50,000	6,675
Gulf Pipe Line Company	Northern points	52,000	20,150
Gulf Pipe Line Company	Port Arthur	52,000	18,200
Sinclair Prairie Pipe Line Co.	Mexia Junction	90,000	26,750
Texas-Empire Pipe Line Co.	Port Arthur	75,000	29,500
The Texas Pipe Line Co.	Port Arthur	60,000	27,850
Sun Pipe Line Co.—Yount Lee	Beaumont District	42,000	35,225
Arkansas Pipe Line Corp.	Shreveport	32,000	9,725
Shell Pipe Line Corp.	Houston	40,000	24,500
Atlas Pipe Line Company	La.-Ark. District	32,000	.....(**)
Atlantic Pipe Line Co.	Atreco	30,000	27,750
Total for trunk lines		720,000	312,500
Stub-Lines			
Tyler Pipe Line Company	Tyler	35,000	.....(**)
Liberty Pipe Line Co.	Rusk Station	26,000	5,775
Tidal Refining Company	Center Station	15,000	6,350
Total for stub lines		76,000	12,125
Grand Total		796,000	324,625

(*) Excludes other 10-inch unit used for Van shipments.
(**) Figures unavailable.

East Texas Has Record Assortment of Refineries

Tyler, Texas.—A surplus of high gravity crude at bargain prices in the East Texas field has attracted the greatest number of refineries and skimming plants ever concentrated in a single area. Including five plants now under construction, there are 29 within the field proper, or situated within sight of the derricks over producing wells, and more plants are proposed. The combined capacity of these plants is 86,250 barrels, but monthly operations have never averaged more than 50 per cent of the rated capacity since the field became a major refining center. Quotations on refined products eminating from these plants virtually dictate the price market on spot sales in the Southeast and Middlewest, as the plant owners have ready access to a greater volume of fresh crude at "buyers' prices" than any other refining center.

An accurate check on crude charges to stills is impossible, as some of the plants provide markets for illicit oil, and do not incorporate same in reporting on plant activities. Crude deliveries to these plants for the week ending November 9 was estimated at about 30,000 barrels daily.

Sinclair Refining Company is the only major unit operating a refinery in the district, and is also the only plant owner known to be buying the top posted price of $1.12 per barrel for local crude. The price offers of the other plants range downward from 98 cents to 35 cents per barrel.

Tank trucks provide the market outlet for the bulk of the gasoline and kerosene manufactured by the small skimming plants, and for this reason a number did not go to the trouble to locate near railroad facilities. There are eight plants completed and building within and near the town of Gladewater, located in the northwest portion of the field.

Dynamite Outrages Found Workings of a New Racket

Longview, Texas.—The arrest of three men, including a contractor specializing in fighting well fires and wild wells, by Texas Rangers and militia guard on duty in the East Texas field has solved the mystery surrounding recent dynamiting of two closed in wells of major companies. Confessions alleged to have been made to authorities by two of the men arrested revealed that the wells were dynamited so the contractor could seek the job of placing the wild wells under control for a flat fee of $7000, but in each case the bombers failed in their efforts to release and ignite the full flow of production. Charges of arson and attempted arson have been filed in Gregg County district court against H. L. Patton, and Troy and Lawson F. Wall, brothers, and the maximum penalty is to be sought by the state. A written statement by the Wall brothers has aided authorities in working up their case, as the former are said to have admitted receipt of $500 for each well dynamited.

Humble Oil & Refining Company's Mary Killingsworth 3, located in the upper section of the field, was thrown open on the night of August 20 as result of the discharge of a bomb near the Christmas tree, but the concussion extinguished a fire kindled to ignite the production. The flow was placed under control within 24 hours. Shell Petroleum Corporation's C. C. Landers 3, located in the same section, was dynamited about 2 a.m. November 1, and caught fire from an ignited oil soaked gunny sack draped across the connections by the bombers. However, the explosion failed to sever the connections, and the escaping production was closed in the next day after using chemicals to extinguish the flames.

Officers making the arrest stated that the hired bombers had instructions to select wells owned by companies financially able to pay the going price asked for handling a burning wild well.

Operators Hard Put to Keep Track of Lease Names

Tyler, Texas.—Memorizing names of company owned leases by employes is not an easy task in the East Texas oil field, owing to the large number of separate producing tracts now held by some of the largest units. Humble Oil & Refining Company was operating 151 separate producing leases in the field on October 1, and in addition to this total has farmed out about a score of leases that have also been placed on production. All of its leases had not been placed on production at the time of the count.

Magnolia Petroleum Company holds second place with 85 separate leases on production, while Gulf Production Company et al have been successful in obtaining production from 75 leases. Sun Oil Company has 58 on production, with a half dozen or more virgin tracts offering promise of oil production when tested. Other owners of a large number of producing tracts includes: Sinclair Prairie Oil & Gas Company 49; Stanolind Oil & Gas Company et al 47; Tidal Oil Company 46; Shell Petroleum Corporation 45 and Yount-Lee Oil Company 43.

Refineries in East Texas District

Company and address—	Daily Capacity	Plant Locations	Railroad Connection
Alamo Refining Co. (was Slack) Tyler	2,500	Camps Switch	T&P
Arrow Refining Co., Overton	2,500	Overton	I&GN
Beacon Oil & Refining Co., Henderson	4,000	NW Henderson	I&GN
Boone Refining Co., Arp	1,000	Arp	I&GN
Central Refining Co. (Inactive)	10,000	Friar	I&GN
Constantin Refining Co., Overton	2,500	Overton	I&GN
R. X. Cook, Gladewater	500	Gladewater	T&P
East Texas Refining Co., Dallas	12,000	Longview Jun't	Santa Fe
East Texas Refining Co., Dallas	6,000	Friar	I&GN
Gaso Refining Co.	250*		....
Gladetex Refining Co., Gladewater	750	Gladewater	T&P
Gladewater Refining Co., Gladewater	1,500	Gladewater	T&P
Gregg Refining Co., Gladewater	300*	Gladewater	....
H. & M. Refining Co., Gladewater	300	Gladewater	....
Jacksonville Refining Co.	250	Omega	....
Kilgore Refining Co., Overton	1,500	Kilgore	I&GN
Lake Refining Co., Gladewater	250	Gladewater	....
Overton Refining Co., Overton	3,500	Overton	I&GN
Pennant Refining Co., Kilgore	400*	Kilgore	I&GN
Pet. Refractionating Corp., Ft. Worth	10,000	Bodie	I&GN
Roland Refining Co., Arp	250*	Arp	I&GN
Rusk Ref. Co. (was Diamond), Overton	3,000	Overton	I&GN
Sinclair Refining Co., Fort Worth	3,500	E of Gladewater	T&P
Southern Oil Refining Co., Tyler	1,000	Reeds Switch	I&GN
Taylor Refining Co., Tyler	15,000	Tyler	Cotton Belt
Unit Ref. Co. (was Guillory), Kilgore	250	Kilgore	I&GN
V. O. E. Refining Co. (was Mackey), Gladewater	1,000	Gladewater	T&P
V. O. E. Refining Co., Gladewater	2,000*	Big Sandy	Cotton Belt
Woodland Refining Co. (was Cooper-Potter), Kilgore	250	Kilgore	I&GN

* Building.

Will Ask Texas Commission To Limit Storage Charges

Tyler, Texas.—An organized movement has been launched by East Texas operators to ask the Texas Railroad Commission to limit crude storage charges when buyers settling in part for oil to one half-cent per barrel monthly, and also to issue crude "warehouse receipts" to the owners of the oil. A petition to this effect will be submitted to the commission when a hearing is held on the application of Humble Pipe Line Company for approval of a tariff that calls for a monthly storage fee of two cents per barrel. A hearing was scheduled for October 26 at Austin on the latter's application, but postponed until November 10 at the company's request. A second delay occurred because of the commission being engaged with the legislature in the passing of the market demand law, and no new date has been set.

The well owners affected by Humble's policy of paying for 60 per cent of crude accepted, and storing the remainder at two cents per barrel monthly, plus 10 cents per barrel gathering charge, plan to use the "warehouse receipts," if approved by commission, in settling obligations, although a discount would be absorbed. Same would also be used in settling for bills sent out by Humble Pipe Line Company to operators for the first month's storage charges plus the crude gathering charge, totaling 12 cents per barrel.

Proration Penalty Suits Reach Important Money

Tyler, Texas.—The treasury of the State of Texas would make progress towards resuming a cash position should the state collect in full the scores of penalty suits now on file against violators of proration restrictions in the East Texas oil field. Suits calling for a penalty of $1000 for each day of over-production of a well are being filed in district court of the county in which the well is located through the cooperation of the Texas Railroad Commission and representatives of the attorney general. Properties named in such suits automatically become difficult to sell with a clear title owing to the possibilities of the state later receiving judgment on charges filed since the enactment of the new proration law. The largest individual suit filed for penalties aggregated about $500,000, but charges were based on the old proration law, which was declared void by a test case in federal court.

East Texas Field Developments

Completions

Company, Well and Location	Initial Production Bbls.	Depth
JOINER AREA—		
Ambassador Oil Corp., Town Heirs 1	6500	3790
Aston Oil Co., J. R. Alford (46-ac) 2	6000	3732
C. P. Oil Co., Mayfield-Alford (20-ac) 4	2000	3660
Droppleman Drl. Co., F. J. Cox 5	2500	3704
G. W. Eaton et al, Fee (2½-ac) 1	9600	3769
R. W. Fair et al, Fee (27.7-ac) 5	9000	3650
W. H. Gant & Garvin, W. P. Moore (70-ac) 2	2000	3637
W. P. Moore 7	300	3625
Gulf Prod. Co., W. O. Alford (157-ac) 2	7500	3721
Samp Stone (28½-ac) 4	8400	3642
Humble O&R Co., A. D. Blackwell (325-ac) 12-A	8000	3647
Kangerga Bros. (73¼-ac) 5-A	5500	3699
W. A. Mullikin (166.4-ac) 13	10,000	3776
W. L. Price (466-ac) 24	9500	3758
J. H. Silvey 2-A	8500	3692
J. W. Turner (400-ac) 12	9000	3796
J. W. Turner (400-ac) 13	8000	3744
Virginia Turner (146-ac) 7-A	8500	3733
F. M. Wooley (41-ac) 4	10,000	3700
Hunt Prod. Co., Sue Hale (91-ac) 4	200	3712
A. B. Wooley (53-ac) 6	2500	3750
D. E. Killam & D. H. Gibbs, W. M. Camp (5-ac) 1	100	3610
Lucey Pet. Co., B. F. Maxwell (94-ac) 5	7200	3684
B. F. Maxwell (94-ac) 7-A	10,500	3775
C. H. Lyons et al, W. P. Moore-Arkansas 1	2500	3633
Mid-Kansas O&G Co., H. C. & G. W. Burton (148.8-ac) 11	8000	3712
M. M. Cross (814-ac) 46	3000	3643
W. T. Grissom (842-ac) 32	7000	3654
G. W. Moore (92-ac) 6	4500	3673
J. H. Sharp (482.67-ac) 9	5000	3706
D. C. Roberts et al, E. B. Alford (12½-ac) 1	500	3652
Sinclair Prairie Oil Co., Peter Tipps (230-ac) 11	9000	3687
Jack Wiley (21-ac) 3	10,000	3823
Stroube-J. L. Collins & Co. & Wheelock, Pinkston (53-ac) 5	8000	3658
The Texas Co., W. W. Henry (229-ac) 6	6500	3659
W. W. Henry (229-ac) 7	2000	3674
A. S. Jarvis (115-ac) 6-B	2500	3667
Allen Kersh (211-ac) 9	7000	3625
Tidal Oil Co., J. M. Shaw (85-ac) 7	8500	3750
Unacre Oil Co., E. S. Thrash (1-ac) 2	8000	3799
Weaver-Perry Oil Corp., T. O. Wright (12-ac) 4	9500	3707
KILGORE AREA—		
J. B. Bennett (was Whittle-Kavanaugh), W. Smith 3	8500	3610
Blue Star Oil Co., Sabine River 7-D, Tr No. 7	10,000	3509
Burk Royalty Co., D. Carr (21-ac) 1-B	7200	3480
Carl Dunham et al, J. H. Scoggins-Republic (28-ac) 1	7500	3665
East Texas Oil Ref. Co., A. Givens (22-ac) 5	9000	3670
Gillum-Weaver & Florey, I. Brightwell (7½-ac) 1	6500	3643
Gulf Prod. Co., Hosea Baton (56-ac) 1	7200	3657
S. B. Hall (50-ac) 5	7500	3673
A. A. King (55-ac) 6	2500	3577
Hensley-Dutton (D. & H. Oil Corp.), L. Howard 1-B	8500	3626
Houston Oil Co., S. S. Laird (70-ac) 5	7000	3652
Humble O&R Co., J. N. Peterson 6	9500	3609
W. D. Peterson (100-ac) 5	7200	3645
Invincible Oil Co., Weiss (66-ac) 5	9000	3595
Iotex Oil Corp., Tom Beall (47-ac) 2	8500	3735
Jones-O'Brien, Inc., Hughey-Ross (127-ac) 9	7000	3546
Frank King (Frances Oil Co.,) Scoggins-Republic (50-ac) 4	8400	3662
Edwin Lacey et al, Fee (1¾-ac) 1	8600	3597
John E. Mabee, Inc., M. T. Cole-Shell (120-ac) 6	9500	3548
Magnolia Pet. Co., John Radford (252-ac) 6	11,000	3696
Marcus Oil Co., (was Mission Oil Co.), Clayborn (46-ac) 3	9000	3710
F. W. Martin Co., Trip Elder (3½-ac) 1-B	3000	3601
Ortiz Oil Co., Brightwell 1	8000	3668
V. J. Pearson et al, W. N. Crim 1	5000	3615
Quad Corp., Duncan (40-ac) 3-A	8500	3640
Rhoads Drl. Co., Sabine River 4, Tr. No. 5	8200	3532
Shell Pet. Corp., D. Carr (100-ac) 3	6000	3449
J. B. Watson (285-ac) 22	12,000	3654
E. W. Willoughby (57-ac) 8	10,500	3596
Tidal Oil Co., Jack Bean (85-ac) 7	8000	3575
M. B. Hughey (200-ac) 14	7500	3518
M. B. Hughey (200-ac) 15	7000	3530
Tysco Oil Co. (was Cromwell et al) Bradbury 2	11,000	3650
Whittle-Kavanaugh (Trans-State Oil Co.), J. B. Watson (15-ac) 4	9000	3585
J. Zeppa-Delta Drl. Co., Hughey-Ross (10-ac) 2	4000	3575
LONGVIEW AREA—		
Alma Pet. Corp., J. W. L. Younse (86-ac) 6	4500	3670
Amerada Pet. Corp., E. Burnside (100-ac) 7	10,000	3557
Atlantic Oil Prod. Co., J. M. Moore (456-ac) 31	10,500	3534
R. W. "Jack" Blalock et al, State (1.57-ac) 1, Tr. No. 11	14,000	3475
Deep Rock Oil Co.-Murphy, H. Pritchard (105-ac) 9	15,000	3548
East Texas Oil Ref. Co., A. Christian (65-ac) 8	11,000	3660
F. & M. Drl. Co., K. C. Moser-Blackstone (8½-ac) 2-B	12,000	3610
Rosa V. Glasscock et al, A. V. Bacle (6-ac) 2	9600	3619
Groneman & Doran, M. E. Church 1	8000	3625
Howard Pet. Corp., Grace Davis (47-ac) 6	10,000	3595
Humble O&R Co., C. C. Clemens (75-ac) 5	10,500	3689
T. B. Harris (175-ac) 11	9500	3554
A. O. Phillips 6	8500	3650
G. W. Willingham 7	8400	3705
T. D. Humphrey et al, F. P. Branson (24-ac) 1	*	3645
A. N. Landes et al, Smith 1	*	3682
Magnolia Pet. Co., E. H. Brawley (80-ac) 6	12,000	3518
F. M. Fonville (50-ac) 5	13,000	3556
W. E. Jones (99.92-ac) 8	8500	3686
Mansion Oil Co., T. A. Webb (34¾-ac) 3	11,000	3727
Marine Prod. Co., W. H. York (41-ac) 5	12,000	3589
Mullendore & Berry, E. H. Brawley 1	10,000	3535
J. F. Murphy et al, E. Moore (31-ac) 2	8000	3730
New Process Prod. Co., Geo. Anderson (8-ac) 4	9500	3535
Roeser-Pendleton, Inc., Satterwhite (50-ac) 4-B	9000	3680
Shell Pet. Corp., C. C. Slaton (123.65-ac) 8	11,000	3670
C. C. Slaton (123.65-ac) 9	10,000	3633
Simms Oil Co.-Frank Buttram, W. R. Nicholson (800-ac) 14	*	3705
Sinclair Prairie Oil Co., Mary Lawson 10	9500	3515
F. D. Spratt et al, Mrs. K. Bumpas (3½-ac) 2	8400	3620
Sun Oil Co., John Hargraves (200-ac) 10	3500	3736
Mose Thomas (79-ac) 5	13,000	3566
Superior Oil Co., H. Pritchard (100-ac) 10-A	12,000	3550
H. Pritchard (100-ac) 11-A	12,000	3560
The Texas Co., T. W. Lee (210-ac) 10	9000	3568
R. H. Vise et al, L. Graves (29-ac) 1	7000	3674
Yount-Lee Oil Co., J. D. Davis (80-ac) 7-A	11,000	3591
J. D. Davis (80-ac) 8-A	9500	3587
L. E. Orms (55½-ac) 6	9600	3524
VAN FIELD—		
Pure Oil Co., A. P. Tunnell (101.2-ac) 10	450	2940

East Texas Field Developments

Completions

Company, Well and Location	Initial Production Bbls.	Depth
HOPKINS COUNTY—		
Columbia O&G Co. et al's W. J. McLeod 1	*	3504

Wildcat Drilling Report

(Wells shut down not included)

ANDERSON COUNTY — W. H. "Bill" Roeser et al's J. B. Hanks 1, Anderson County School Lands sur, elev 449 ft, Pecan chalk 3097-3254 ft, Austin chalk 4210-4444 ft, top Woodbine series 4774 ft, coring sand 4840 ft.

BOWIE COUNTY—Roy E. Anderson et al's A. Y. Breckenridge (464-ac) 1, M. Dykes sur, elev 352 ft, top Nacatoch 775 ft, top Saratoga chalk 1180 ft, Pecan chalk 1362-1805 ft, cem 6-inch cas 2806 ft, td 2810 ft. Tom Bell-W. J. Dobbs & Fred S. O'Neill's Mrs. T. M. Moss (465-ac) 1, O. D. Watson sur, rig. W. S. Langford et al's W. W. Whybark (100-ac) 1, J. H. Dyer sur, elev 377 ft, dr dry sand 2245 ft.

CASS COUNTY — Texon Oil Co.'s C. W. Kessler (125-ac) 1, H. Haas sur, materials.

CHEROKEE COUNTY — Barclay-Taite & Deason's A. T. O'Neal (13-ac) 1, J. M. Procella sur, dk. L. J. Hopcroft & A. L. Vandeventer's J. R. Taylor (200-ac) 1, L. M. Doherty sur, lcn. Loring Oil Co.'s F. M. Swearington 1, O. Lund sur, rig. Saranac Oil Co.'s P. E. Jones (132-ac) 1, J. D. Hamilton sur, materials. Elliott-Sikes & Wilson-Stubbs Oil Corp.'s M. F. Ragsdale (53-ac) 1, J. P. Wolfin sur, elev 520 ft, co 3600 ft to deepen to 4200 ft.

DELTA COUNTY—C. M. Joiner Pet. Corp. et al's J. A. Blackwell 1, H. Dunnetella sur, elev 468 ft, Woodbine sand 1935-1950 ft, top Georgetown lime 2030 ft, top Comanchean 2913 ft, sd 3310 ft.

FRANKLIN COUNTY—Franco Oil Co. (J. F. Mills-L. S. Harper-A. P. McGee's) L. S. Harper (118-ac) 1, W. N. Dawson sur, elev 356 ft, top Pecan chalk 1320 ft, fsh liner with hfw 3404 ft.

FREESTONE COUNTY—Clyde Creighton & Co.'s W. A. Holley (80-ac) 1, A. B. & M. sur, Abst. 61, top Pecan chalk 3105 ft, sd 3670 ft. W. A. Reiter-Neversuch Oil Co.'s O. Burleson (202-ac) 1, W. Carter sur, A-115, elev 391 ft, coring sand 3656-83 ft.

HENDERSON COUNTY—B. L. Green et al (was J. M. Rogers') M. H. Gossett (103-ac) 1, L. D. Stover sur, Abst. 87, elev 341 ft, top Taylor 1450 ft, top Austin chalk 2347 ft, top Woodbine sand 3267 ft, sd 3328 ft. H. H. Myers et al's M. E. Olson (80-ac) 1, Geo. Wilson, sur, elev 512 ft, Pecan chalk 3070-3245 ft, claim oil sand core 3711-19 ft, cem 6-inch cas 3701 ft.

HILL COUNTY—T. J. Spikes et al's M. H. Davis (55-ac) 1, J. R. Alexander sur, Austin chalk 727-1030 ft, dr 1365 ft.

HOPKINS COUNTY—Burgess & Simpson's Mt. Vernon Nat'l Bank 1, M. E. & P. Ry. sur, elev 385 ft, sd 1210 ft. Columbia O&G Co.-McHenry-Lechner & Hubbard's W. J. McLeod (85-ac) 1, (east) D. Holbrook sur, elev 485 ft, Pecan chalk 1258-1484 ft, top Austin chalk 1968 ft, top Woodbine series 3061 ft, dry and sbn in red beds (no sand or water) 3504 ft.

HUNT COUNTY—Arthur Kelsey et al's W. R. Terry (139-ac) 1, Jas. Roads sur, lcn.

KAUFMAN COUNTY — Milhoan Drilling Co. & Paul L. Meaders et al's T. C. Coleman (259-ac) 1, W. C. Gibbard sur, sd 1120 ft. Tom Nash et al's Mrs. C. H. Gardner (6-ac) 1, E. A. Ferguson sur, lcn. J. M. Scott-Stanley Darrill et al's S. Pannill (649-ac) 1, A. Cherino sur, sd 2345 ft.

LEON COUNTY—Leon County Oil Co.'s John Morris (200-ac) 1-A, A. F. McWhorter sur, sd 2540 ft. Shell Pet. Corp.-J. R. Black-Penn Oil Co. et al's Wm. Phillips (160-ac) 1, E. A. Swayze sur, elev 423 ft, Pecan chalk 4135-4181 ft, Austin chalk 4841-5570 ft, cored sand showing oil and gas 5983-91 ft, but dry on test, dr shale 6015 ft. John P. Sheffler & Allday's W. R. Thompson (197-ac) 1, N. M. Allen sur, sd 2170 ft.

LIMESTONE COUNTY—C. M. Joiner Pet. Corp.-Miller Drlg. Co.'s W. Stephenson (54-ac) 1, Geo. Gentry sur, top Austin chalk 3050 ft, dr chalk 3120 ft.

MORRIS COUNTY — Buchanan-Burkhalter et al's Staggers (65-ac) 1, Forbes & Nelson sur, elev 370 ft, hard Pecan chalk 2526-3020 ft, Austin chalk 3483-3506 ft, fsh swab in 2-inch tubing, td 3672 ft. Grover Hart et al's Walcott-Lott (577-ac) 1, D. A. Russell sur, dr 1275 ft.

RED RIVER COUNTY—Concord Oil Co.'s J. R. Dellahunty 1, I. Moore sur, dr 2720 ft. L. G. Priest et al's R. W. Peek (220-ac) 1, Abram Wagley sur, dk.

ROBERTSON COUNTY — C. A. Everts Drlg. Co. et al's Cook 1, H. Henry sur, dr 1955 ft.

RUSK COUNTY—T. E. Castle et al's R. H. Gary (50-ac) 1, J. Latham sur, top Pecan chalk 2678 ft, top Austin chalk 3480 ft, top Georgetown lime 3672 ft, sd 3810 ft. John Keegans sd 1415 ft. Fred W. Shields & Florence Oil Co.'s W. Buckner (40-ac) 1, John E. Davis sur, elev 418 ft, Pecan chalk 3220-3590 ft, top Austin chalk 4035 ft, dr chalk 4110 ft.

SMITH COUNTY—Mundt & Mount's Murray (65-ac) 1, Marshall University sur, elev 579 ft, Navarro 2858-79 ft, Pecan chalk 3496-4000 ft, dr by lost stem, td 4635 ft. J. O. Allen et al's Fee 1, M. J. Henriquez sur, elev 468 ft, Pecan chalk 2823-3192 ft, top Austin chalk 3646 ft, dr 3720 ft.

UPSHUR COUNTY—Cranfill-Reynolds Co. et al's Berry Bros. (412-ac) 1, J. P. Hutchinson sur, elev 333 ft, top Pecan chalk 2442 ft, dr 2750 ft. F. W. Maddox et al's D. A. Fleet (1-ac) 1, C. H. Cooper sur, elev 336 ft, top broken chalk 2370 ft, hard Pecan 2430-3019 ft, Austin chalk 3598-3651 ft, dr ashy-sand 3675 ft. Newsom & Orr (was B. L. Watson's) D. F. Smith 1, J. R. Davis sur, sd 1860 ft. Tucker & Van Fleck's S. J. Mangham (564-ac) 1, J. J. Hooper sur, dr chalk 2735 ft. J. K. Wadley-Exans & C. Lyons' W. S. Jones (100-ac) 1, Jas. M. Dunn sur, elev 263 ft, top broken chalk 2333 ft, hard chalk 2402-2977 ft, top Austin chalk 3557 ft, cored salt water sand 3680-81 ft, oil sand 3690-98 ft, cem 6-inch cas 3684 ft.

VAN ZANDT COUNTY—Daisy O&G Co.'s Mrs. C. A. Browning (100-ac) 1, J. P. Tackett-Bell sur, Pecan chalk 2109-2230 ft, top Austin chalk 3160 ft, sd 3285 ft. Gardner Bros. & Roy C. Ling's J. Leonard (53½-ac) 1, Phillip Mason sur, elev 511 ft, Pecan chalk 2340-2410 ft, Austin chalk 3475-3781 ft, top Woodbine sand 4240 ft, top lower Cretaceous 4927 ft, top Georgetown 3950 ft, fsh 5472 ft.

WOOD COUNTY—DeGenther & F. H. Zeigen et al's M. L. McClain (66-ac) 1, Sam Brooks sur, elev 455 ft, Pecan chalk 2553-2740 ft, sd 3860 ft. F. B. Parriott & J. S. Hanlon's J. H. Harvey (was Stuart) (1964-ac) 1, M. H. Ussery sur, elev 604 ft, dr 1200 ft. Wood County O&G Co.'s Guy Davis 1, John R. Clute sur, sd 3690 ft. D. Replogle & Sinclair Prairie Oil Co.'s John C. Saner 1, Blk. 19, Jas. M. Candler sur, lcn.

East Texas Border Counties

Completions

Company, Well and Location	Initial Production Bbls.	Depth
SHELBY COUNTY—		
Western World Pub. Co., Foster & Billingsley 1, J. Bowlin sur.....	*	2940

Wildcat Drilling Report

(Wells shut down not included)

HARRISON COUNTY—Great Eastern Oil Co., W. L. Rudd 1, Wm. Steele sur, dr 1550 ft. Ryan Cons. Pet. Corp., Furrh 1, F. O'Neal sur, elev 369 ft, cored 15 ft, rotten porous lime, possibly oolitic 5124-39 ft, cemented 7-inch OD cas 5075 ft, arr dr plug and test, td 5139 ft.

MARION COUNTY—Baunauch Dev. Co., Miller 1, H. Fulgram sur, dr 4550 ft. Starling & Preston, Henderson 1, R. Bennington sur, sd 1600 ft. Green Smitherman et al, Lindsay 1, Alex Albright sur, owdd, td 2327 ft, Pecan Gap, (corrected depth). Wroe-Nichols, Henderson 1, Geo. Bledsoe sur, sd 3520 ft.

SHELBY COUNTY—Neil Lease & Oil Well Synd., W. P. Harvey 1, W. P. Harvey sur, materials. General Minerals Corp., Pickering 2, D. S. Haight sur, fsh 3500 ft. K. H. Francis, Jno. Mims 1, Mary Smith sur, dr 3375 ft.

Texas Permits

ARCHER COUNTY—Mrs. H. B. Wallace, Wichita Falls, Fee, 167, 35, S. P. Ry. sur, 349 ft s of 27. C. B. Long et al, Wichita Falls, Kemp-Kempner, B, 200, 4, Blk. 67, S. P. Ry. sur, 500 ft from n and 75 ft from e line. L. I. Lyons, Wichita Falls, P. Browning, 100, 1, Blk. 3, GE&L sur, 900 ft from w and 1000 ft from s line. W. B. Hamilton, Wichita Falls, Ikard, C, 80, 1, J. J. Young sur, 200 ft from n and w lines. Consolidated Oil Co., Wichita Falls, M. B. Ray, 160, 1, B 149, Club Ranch sur, 150 ft from s and w lines. Floyd Miller, Fort Worth, W. J. McMurtroy, 110, 1, M. Galen sur, 1458 ft from w and 150 ft from s line. J. J. Moran et al, Wichita Falls, R. D. Webb, 100, 1, A. Rohus sur, 2850 ft from n and 150 ft from w line.

ARANSAS COUNTY—Frank E. Kistler, Tr., San Antonio, T. P. McCampbell, 1, Blk. 58, Lot 1, 150 ft from n and e lines.

BEE COUNTY—V. I. Grisham, San Antonio, A. J. Hill, 92, 1, Sec. 11, W. G. Ragley sur, 330 ft from s and e lines.

BEXAR COUNTY—Frank E. Kistler, Tr., San Antonio, W. J. Cover, 200, 1, No. 5 M. Gotari sur, 330 ft from s and e lines. Eckert & Son, San Antonio, L. Brehm, 93, 3, No. 58 Boquor sur, 1100 ft from n and 210 ft from e line; 4, 1400 ft from n and 220 ft from e line. Gatlin Oil Co., San Antonio, I. A. Beck, 278, 15, J. Montez sur, 846 ft from ne and 701 ft from se line.

BROWN COUNTY — W. D. Cunningham, Brownwood, E. Kilgore, 100, 1, H. C. McClure sur, 850 ft from n and 150 ft from e line.

BURNETT COUNTY—F. P. Jackson, Tr., et al's R. L. Needham 1, J. H. Chambers sur, Austin, J. M. Rountree, 160, 1, L. Blakely sur, south central part of lease.

CALDWELL COUNTY—D. V. Smith et al, San Antonio, W. M. McMahon, 50, 1, J. Pinchback sur, 450 ft sw of center of ne line.

CALLAHAN COUNTY — McDaniel Oil Corp., Cisco, S. S. Diller, 80, 15, S 48, LAL sur, 450 ft from w and 600 ft from s line. C. B. Holmes, Baird, A. R. Kelton, 43, 3, S 148, BBB&C sur, 300 ft n of No. 2.

CLAY COUNTY—Duncan & White, Wichita Falls, Boyd, 90, 1, 2644 TE&L sur, 150 ft from s and w lines.

DUVAL COUNTY—Byrd Oil Co., San Antonio, P. T. Wright, 132, 4, No. 101 sur, 756 ft e of No. 2.

FORT BEND COUNTY—Gulf Prod. Co., Houston, A. E. Myers, 455, 5, Jno. Rabb sur, 1212 ft e of No. 4.

GREGG COUNTY—J. T. Burlingame, Tyler, H. E. Thomas, 40, 2, J. M. Morris sur, 660 ft s of No. 1. Hendrick Ranch Royalties, Tulsa, Okla., A. M. Kinsel, 24, 2, H. H. Kirk sur, 287 ft from n and 250 ft from e line. King Royalty Co. & Massie, Wichita Falls, J. Flemister, 22, 3, G. W. Hooper sur, 330 ft from n and e lines. Texota Corp., Longview, M. Fenn, 11, 2A, D. Ferguson sur, 75 ft w of No. 2. Bass & Dillard, Longview, S. Carr, 16, 1, M. McCurry sur, 330 ft from e and 210 ft from s line. Cal Tex Corp., Kilgore, L. D. Crim, 50, 4, W. P. Chisum sur, 350 ft from e and 368 ft from s line. Pearce & Moore, Kilgore, H. T. Elder, ½, 1, M. Van Winkle sur, center. F. B. Hynes, San Antonio, D. Beall, 12, 2, M. Van Winkle sur, 150 ft from s and e lines; 3, ne corner. A. P. Carr, Longview, G. W. Richey, 10, 2, Wm. Carleton sur, 87 ft e of center of w line; 3, 150 ft w of center of e line. Simms Oil Co., Dallas, J. J. Flewellen, B, 374, 23, M. Mann sur, 3000 ft from e and 425 ft from n line. Jim Cloud, Inc., Tyler, E. A. Anderson, 13, 2, G. W. Hooper sur, 388 ft from w and 220 ft from s line. C. C. Wilks, Tyler, S. Carr,

4½, 1, M. McCurry sur, 330 ft from e and 210 ft from s line. Dyck Oil Co., Tulsa, Okla., J. M. Christian, 37, 6, G. W. Hooper sur, 220 ft from n and w lines. Pitkin-Goldston Oil Co., Longview, M. Bonner, A, 23, 3, J. McRae sur, 245 ft from n and 1055 ft from e line. Byrd-Frost, Inc., Dallas, J. A. King, 13½, 1, W. P. Chism sur, se corner; 2, 800 ft from s and 150 ft from e line; 3, 330 ft from s and 145 ft from w line. Shell Pet. Corp., Dallas, B. F. Laird, A, 211, 12, J. Wilkinson sur, 640 ft s of No. 11; J. B. Watson, 285, 23, J. S. Caruthers sur, 310 ft w of No. 15; W. W. Elder, 196, 5, J. S. Caruthers sur, 370 ft se of No. 8; H. Hampton, 169, 8, D. Ferguson sur, 660 ft sw of No. 7; J. W. Akin, 100, 7, W. H. Castleberry sur, 702 ft sw of No. 2; A. N. King, 160, 10, G. A. Thomason sur, 662 ft n of No. 6. Yount-Lee Oil Co., Beaumont, M. McKinley, 23, 3, Wm. Robinson sur, 770 ft from n and 330 ft from w line. Humble Oil & Ref. Co., Houston, S. S. Laird, B, 568, 26, M. Van Winkle sur, 660 ft s of No. 25; 25, 932 ft s of No. 2. M. Killingsworth, 99, 9, H. Hathaway sur, 2509 ft from w and 356 ft from n line. A. Carter, 90, X-11, D. Ferguson sur, 228 ft from w and 398 ft from s line; X-12, 100 ft from w and 248 ft from s line. Gulf Prod. Co., Houston, S. Hilburn, B, 172, 47, L. B. Outlaw sur, 310 ft from n and 188 ft from w line; 48, 686 ft n of No. 49; 49, 188 ft from w and 330 ft from s line. B. Watson, 93, 8, J. S. Caruthers sur, 749 ft nw of No. 2. J. C. Judge, 1036, 28, F. W. Johnson sur, north offset to Rhoads No. 6B; 29, north offset to Rhoads No. 6A; 30, e offset to Rhoads No. 2. A. Nichols, 52, 6, D. Dainwood sur, 385 ft n of center of s line. G. W. Culver, 208, 17, M. Van Winkle sur, 267 ft from e and 330 ft from s line. Atlantic Oil Prod. Co., Dallas, J. M. Moore, 456, 35, F. W. Johnson sur, e offset to Rhoads No. 5. A. Tooke, B, 40, 4, W. C. Wakeland sur, 820 ft n and 600 ft from e line. Tidal Oil Co., Kilgore, J. S. King, 80, 11, M. Van Winkle sur, 330 ft from n and 1205 ft from w line. Texas Co., Houston, H. T. Elder, 53, 10, M. Scott sur, 330 ft from s and e lines. Stanolind Oil & Gas Co., Fort Worth, E. L. Walker, 35, A3, M. D'llard sur, 401 ft nw of No. 1. J. W. Akin, 81, 5, W. H. Castleberry sur, 1365 ft from w and 222 ft from s line. Magnolia Pet. Co., Dallas, J. King, 33, 7, W. P. Chism sur, 504 ft se of No. 4.

GRAY COUNTY—Mid-Kansas Oil & Gas Co., Tulsa, Okla., E. E. Gething, 160, 1, S 13, B 19, H&GN sur, 1650 ft from w and 330 ft from s line of sec. Baldridge Oil Co., Amarillo, W. E. Melton, 80, 1, S 95, B B2, H&GN sur, 330 ft from n and e line of e½ of ne¼.

GRAYSON COUNTY—O. W. Taylor, Denison, Linvill, 105, 1, Hull sur, 200 ft from e and 314 ft from s line.

GLASSCOCK COUNTY—Phillips Pet. Co., Tulsa, Okla., T. W. Baker, 80, 2, S 21, B 33, T&P sur, 338 ft from n and 335 ft from w line w½ ne¼.

GUADALUPE COUNTY — W. J. Walton, San Antonio, D. Darling, 53, 1, B. Fuqua sur, 150 ft from nw and 165 ft from ne line.

HARDIN COUNTY—Paggi Bros. Oil Co., Beaumont, Weiss, 1, 2A, C. F. S. Jorditt sur, 6 ft from n and 40 ft from e line. Rio Bravo Oil Co., Houston, Fee, 158, J90A, C. S. F. Jorditt sur, 20 ft n of No. J90. Ada Belle Oil Co., Batson, Fee, ¼, 160, Jno. Knight sur, 38 ft from n and 358 ft from w line.

HARRIS COUNTY—Woods & Bennett, Humble, Fee, 2½, 3, Jas. Strange sur, 40 ft from e and 50 ft from s line.

JIM WELLS COUNTY—Humble Oil & Ref. Co., Houston, H. Furhken, 150, 1, P. Sacks sur, 1117 ft from n and 450 ft from w line.

LIBERTY COUNTY—Boney Baggett, Daisetta, B. Baggett, 1¼, 1, J. Devore sur, 50 ft w of center of e line.

LIVE OAK COUNTY—M. W. R. Oil Corp., San Antonio, W. C. Ohlendorf, 100, 1, B 25, SGI & 336 sur, 849 ft from ne and 200 ft from se line.

MONTGOMERY COUNTY—Humble Oil & Ref. Co., Houston, R. L. Cartwright, D, 215, 1, J. A. Davis sur, 344 ft from e and 599 ft from s line. McDonald, 57, 2, J. A. Davis sur, 344 ft from w and 599 ft from s line. So. Tex. Dev., 25, T. Slade sur, 852 ft nw of No. 24. C. L. Dobbins, 329, 3, Ransom House sur, 512 ft from w and 466 ft from s line. A. A. Madeley, 826, 4, Ransom House sur, 960 ft sw of No. 1. Navarro Oil Co., Houston, H. Gallemore, 15, 1, J. A. Davis sur, 280 ft from n and 180 ft from e line. Texas Co., Houston, W. S. Rhodes, 300, 1, T&NO sur, 466 ft from w and 220 ft from s line. E. Moody, 473, 2, Ransom House sur, 466 ft from n and w lines. Alpha Pet. Co., Houston, Keystone Mills, 200, 1, L. Smith sur, 466 ft from e and 1398 ft from s line. Tidal Oil Co., Kilgore, J. W. Lewis, 665, 2, C. B. Stewart sur, 467 ft from n and w lines.

McMULLEN COUNTY—Jacob, Buzzini & Pickett, Inc., San Antonio, L. Jacob, 9A, S 8, W. H. Jacob sur, 660 ft sw of No. 7A.

PANOLA COUNTY—Jas. L. Nelson, Wichita Falls, J. W. Williams, 67, 1, J. Hanks sur, 500 ft from s and e lines. Carter & Skidmore, Carthage, T. J. Wooten, 1339, 1, P. Martin sur, 182 ft from s and 150 ft from w line.

PALO PINTO COUNTY—F. A. Bond, Mineral Wells, F. O. Stokes, 100, 1, S 28, B A, T&P sur, 900 ft from e and 150 ft from s line.

RUSK COUNTY—C. H. Lyons, Shreveport, La., W. P. Moore, 40, 1, M. V. Pena sur, 330 ft from w and 275 ft from s line; 2, 2247 ft e of No. 1. M. E. Hale, Henderson, H. B. Studdard, 22, 2, J. Ximinez sur, 660 ft e of No. 1. G. H. Vaughn, Dallas, L. P. Thrash, 40, 4, F. Cordova sur, 288 ft from n and 330 ft from e line. Hannibal Oil Corp., Longview, E. J. Deason, 11, 3, J. Ximinez sur, 150 ft from n and w lines. Ward Oil Corp., Ardmore, Okla., J. A. Beall, 80, 6, Wm. Chisum sur, 810 ft from n and 330 ft from w line. British American Oil Prod. Co., Tulsa, Okla., Kangera, 38, 5, M. J. Pru sur, 330 ft from n and 750 ft from w line. H. R. Smith, Inc., Luling, J. S. Bean, 11, 2, J. Lewis sur, 330 ft from e and 225 ft from s line. Hunt Prod. Co., Tyler, R. J. Vinson, B, 21, 2, T. J. Moore sur, 330 ft from w and 200 ft from s line. Humble Oil & Ref. Co., Houston, H. White, A, 38, 3, J. M. Scott sur, 194 ft from w and 515 ft from s line. Amended location. H. White, A, 38, 3, J. M. Scott sur, 262 ft from w and 515 ft from s line. B. Laird, B, 62, 4, I. Ruddle sur, 341 ft n of center of s line. B. Laird, A, 100, 6, I. Ruddle sur, 330 ft from n and e lines; 7, 380 ft from w and 330 ft from s line. Gulf Prod. Co., Houston, O. R. Baton, 56, 2, M. Cogswell sur, 705 ft from n and 403 ft from e line. S. B. Stone, 107, 7, D. W. Campbell sur, 662 ft from n and 901 ft from e line. J. W. Shaw, 89, 7, F. Cordova sur, 660 ft w of No. 6. Shell Pet. Corp., Dallas, J. B. Watson, 384, 24, J. S. Caruthers sur, 661 ft nw of No. 12. Texas Co., Shreveport, La., J. W. Wilson, 134, 8, D. Collins sur, 330 ft from e and 1745 ft from n line. G. G. Turner, 30, 2, T. H. Smith sur, 195 ft from w and 862 ft from s line. Stanolind Oil & Gas Co., Fort Worth, R. Christian, 86, 5, W. R. Cooke sur, 800 ft from ne and 330 ft from s line. Mid-Kansas Oil & Gas Co., Shreveport, La., M. Kangera, 105, 8, P. Tipps sur, 173 ft from s and 2380 ft from e line. S. H. Moores, 193, 12, M. J. Pru sur, 330 ft from s and w lines. Clay, 130, 6, M. V. Pena sur, 330 ft from w and 276 ft from s line.

REFUGIO COUNTY—Gulf Prod. Co., Houston, J. O'Connor, 3, CEPI&M, Sec. A133, east central part of sec.

SAN JACINTO COUNTY—J. M. Weaver, Eastland, Delta Lbr., 3660, 1, B 16, J. W. Robinson sur, 2640 ft from sw and 4000 ft from se line sur.

SMITH COUNTY—W. R. McMillan, Tyler, J. P. Lanham, 2½, 1, J. Vargas sur, 168 ft from n and 210 ft from e line. Alexander & Allen, Arp, J. O. Allen, 25, 1, M. G. Henriquez sur, 340 ft from s and e lines. Long Oil Co., Henderson, G. A. Turner, 113, 3, D. W. Campbell sur, 206 ft from n and 160 ft from e line. Manahan Oil Co., Tulsa, Okla., S. S. Cook, 16, 1, J. Vargas sur, 330 ft from n and e lines. Hunt Prod. Co., Tyler, R. W. Fair, A, 136, 9, McAnulty-Vargas sur, 1200 ft from n and 417 ft from e line. Sinclair Prairie Oil Co., Fort Worth, G. Patterson, 164, 6, J. Vargas sur, 330 ft from n and w lines. Texas Co., Shreveport, La., M. Blackwell, 100, 7, Jas. Jordan sur, 1160 ft from n and 330 ft from w line; 8, 660 ft from n and 330 ft from w line.

STARR COUNTY — Jones & Jefferies, Rio Grande City, H. Garza, 500, 1, Sh. 26, 2407 ft from n and 2707 ft from e line. Culberson & Sinclair, Rio Grande City, Kelsey-Bass, 40, 2, S 5, Por. 75-76-77, 450 ft from e and 150 ft from s line.

SHACKLEFORD COUNTY—St. Mary's Oil & Gas Co., Moran, J. W. Littlefield, 112, 30, S 7, L.A.L. sur, 50 ft n of No. 29. Loggie & Arendt Oil Co., Albany, J. W. Hash, 160, 1, 822, TE&L sur, 450 ft from se and sw line. Roeser & Pendleton, Inc., Fort Worth, W. I. Cook, 450, A2, S 139, E. T. Ry. sur, 330 ft from n and 1650 ft from w line. Knight & Guinn, Breckenridge, E. A. Jeter, 40, 2, S 14, B 11, T&P sur, 300 ft n of No. 1.

STEPHENS COUNTY—Cox & Clark, Breckenridge, J. E. Norton, 320, 1, 1039, TE&L sur, 1240 ft from n and 880 ft from e line. Donley & Chastain, Ranger, M. B. Hawkins, 160, 1, S 79, B 6, T&P sur, 450 ft from n and 1310 ft from e line.

TRAVIS COUNTY—Fritz Fuchs, Taylor, E. B. Smith, 50, 1, L. Kimbro sur, 150 ft from n and 450 ft from w line.

UPSHUR COUNTY — Feazel-Davenport Corp., Dallas, W. M. Phillips, 72, 6, F. Edwards sur, 800 ft w of No. 2. B. F. Phillips, Gladewater, E. H. Brawley, 50, 3, Wm. King sur, 660 ft w of No. 2. G. P. Mitcham, Dallas, W. F. Bland, 14, 2, G. W. Hooper sur, 605 ft from e and 290 ft from s line. Shell Pet. Corp., Dallas, C. C. Landers, 207, 13, G. W. Hooper sur, 667 ft sw of No. 10; 4, 219 ft from n & 330 ft from e line.

VAN ZANDT COUNTY — D. E. Killem, Tyler, N. E. Clark, 39, 1, J. Thomas sur, 150 ft from n and w lines. Pure Oil Co., Fort Worth, R. V. White, 35, 5, N.C.S.L. sur, 250 ft from n and 200 ft from w line.

WEBB COUNTY — Dyck Oil Co., Tulsa, Okla., Laredo Oil, 40, 1, B 1100, G. & V. sur, 150 ft from n and 660 ft from w line.

WICHITA COUNTY—Geo. Proctor, Wichita Falls, J. B. Honaker, 40, 11, B 1, C. & M. sur, 600 ft from n and 570 ft from e line. P. J. Flynn, Electra, G. L. Woodard, 40, 4, B 248, Wag. Col. sur, 150 ft from s and 600 ft from e line. J. L. Bridges, Crystal Springs, Miss., Warren, 50, 10, Hensley-Smith sur, 750 ft from n and 350 ft from e line; 9, 750 ft from n and 150 ft from e line.

WILBARGER COUNTY—S. J. Lynch, Vernon, Jokel, 100, 1, S 111, B 14, H&TC sur, 600 ft from n and 150 ft from e line. Texas Co., Wichita Falls, W. T. Waggoner, A, 408, S 7, B 13, H&TC sur, 400 ft w of No. 403.

YOUNG COUNTY—L. V. Fitzwater, Olney, H. Cunningham, 60, 1, 1912, TE&L sur, 450 ft from s and e lines. E. D. Willis, Jean, J. F. Larimore, 40, 1, 253, TE&L sur, 783 ft from n and w lines. Petroleum Prod. Co., Wichita Falls, J. C. Taack, 40, 1, 264, TE&L sur, 468 ft from n and 150 ft from w line. Louis Mollenkopf, Olney, Jeffery, 80, 1, 52, TE&L sur, 750 ft from n and 150 ft from w line. Deininger & Leporin, Dallas, A. C. Speer, 40, 1, S. Tynes sur, 150 ft from s and e lines. G. Stewart, 40, 1, B 1. Y.C.S.L. sur, 150 ft from n and w lines. W. B. Hamilton, Wichita Falls, Jeffery, 80, 1, 43, TE&L sur, 150 ft from n and e lines. Texas Co., Wichita Falls, A. C. Casey, 80, 1, 1486, TE&L sur, 450 ft from n and w lines. King Royalty Co., Wichita Falls, J. F. Larimore, 164, 41, 2246, TE&L sur, 150 ft from n and 1050 ft from w line. Kleiner & Riggs, Graham, J. F. Larimore, 80, 15A, 2246, TE&L sur, 450 ft from w and 150 ft from s line.

ABBREVIATIONS

NOTE—The following is the explanation of abbreviations, signs, etc., used in completion and wildcat reports: *—dry hole, abandoned well; ‡—salt water; †—junked and abandoned; ¶—mill on feet of gas; abn—abandoned; bbls.—barrels; b.s.—basic sediment; cas—casing; co—cleaning out; dk—derrick; dr—drilling; fsh—fishing; ft—feet; in.—inches; lcn—location; m—milling; n, s, e, w—north, south, east, west; r—reaming; sd—shut down; sdtr—sidetracking; sp — spudd ng; sr — straight reaming; std—standardizing; sw — salt water; td—total depth; ur—underreaming; wo—workover; woc—waiting for cement to set; wosr—waiting on standard rig.

SOUTH TEXAS

Perseverance Brings Success in Two Fields. Humble Makes It Three in a Row in Refugio Wildcatting.

EARL POST, *Staff Representative, San Antonio*

Humble Makes Three Good Wildcat Strikes in a Row

San Antonio, Texas.—Humble Oil & Refining Company made it three strikes in a row with three Refugio County wildcats. The third well is M. V. O'Conner 3, F. Rios Survey, which was flowing November 17 by gas induced from O'Conner 2.

It made 56 barrels the first 24 hours, showing 10 per cent cut.

The well encountered a sand at 3136-48 feet, and has 9⅝-inch casing set at 3130 feet. Considerable trouble was experienced in completing the well, and gas was used from the No. 2 well to bring about its flow.

Pending Completion Would Add Much Tuleta Acreage

San Antonio, Texas.—Tuleta field, Bee County, takes position as probably the most interesting spot of all South Texas at this time as the result of a strike November 17 by Dirks Brothers. Their Fee 1, 165 feet out of the southeast corner of Section 3, Uranga Grant, is showing for a producer of large proportions in the Yegua series at 4302 feet, probably 200 feet in that formation.

Should the well make a producer, it will open an entirely new producing zone for the Pettus district and will make all wells abandoned in the horizon formerly referred to as "Pettus" possible bets a little deeper.

The well is a half-mile due west of the Tuleta field and is dry in that horizon at 4109-12 feet. Deepened to 4227-42 feet, it showed about 80 feet of mud and a little gas on a five minute drill stem test. It was abandoned on November 14 at 4297 feet.

Glasscock et al took over the well and cored it five feet deeper November 17, where it showed some saturation. A drill stem test was then made at 4276-4302 feet, where it started blowing mud from the hole in less than 10 seconds. Before a minute had passed, it had cleared itself and was flowing pure pipe line oil. The seat collapsed within five minutes and when the drill stem was removed from the hole, it showed 15 fourbles of oil. The oil tests 44 gravity at 66°, considerably lower than the remainder of the field. Casing is being moved in.

This strike throws a different light on the field, especially since its outlook has been dampened by several dry holes and water wells in the supposedly proven territory.

Heretofore, production in the Pettus area has come from the base of the Jackson and at the contact of the Jackson with the Yegua. The new well, therefore, is of much interest.

The Tuleta field is divided into a number of small tracts, mostly 10 and 20 acres, and the two horizons make it appear that a heavy drilling campaign might result.

United Production Company is drilling in George Ray 44, S. Morris Survey, North Pettus field, same county, which has a sand at 3675-81 feet. It is a south offset to McKinney 3.

Amerada Ends Fishing Job On Frio County Deep Test

San Antonio, Texas.—Amerada Petroleum Corporation finally completed a fishing job in Halff & Oppenheimer 1, Frio County, and is resuming drilling at 4385 feet. The well is located in the W. F. Halsel Survey about 12 miles southwest of Pearsall.

This well is on a block of about 83,000 acres and is intended to be probably the deepest well ever drilled in Texas. It is unusually interesting as a large sum was spent on working out the structure.

Condemned Sector Gets Well in Government Wells

San Antonio, Texas. — Government Wells, Duval County, continues its long list of producers, but most important, an area condemned by salt water now comes into the play with oil production.

C. G. Porter took over the J. T. Smith tract in NW NE Section 46 in the extreme southeast portion of the north field, where Buchanan and Terrell drilled a salt water well at 2306-12 feet several months ago. This was from the lower lens of the Government Wells sand. The Porter well, located 130 feet north and west of the salt water well, early in the week was brought in from the upper lens of the sand at total depth of about 2290 feet, where it pumped 75 barrels the first 16 hours.

About a mile north of this well and on the edge of the field, Magnolia Petroleum Company completed Bryan White 2, Section 44, in the upper level about 2300 feet, where it pumped 85 barrels a day. These wells are the first pumpers in the field and both are from the upper level. Those in the second portion of the sand are flowing.

Over on the extreme western side of the field, H. H. Coffield's R. Wendt 4, SEc SE NE Section 43, blew in wild at 2260 feet on November 12 and was out of control three days. It showed better than 25,000,000 cubic feet of gas and sprayed about 250 barrels or more of oil while running wild. It was shut in to the allowable of 125 barrels when finally shut in.

Caldwell County Success Surrounded by 11 Failures

San Antonio, Texas.—Cargill et al went into an area condemned by 11 dry holes and have opened another Caldwell County oil field. Early in the week Dameron 1, three miles south of Lockhart, was flowing by heads from 1909 feet. It has casing set at 1774 feet. The well originally was drilled to 1829 feet in the Austin chalk, where it bailed dry. Deepened to the new depth, it started making a small flow.

The fact that it is surrounded by the large number of failures indicated that the pool will be rather limited in area.

Another important test in the county is D. V. Smith et al's McMahon 1, on a 50-acre tract in the James Pinchback Survey, 1½ miles northeast of Wester Oil & Gas Company's McCrory crevice producer. It has set surface casing at 80 feet and resumed drilling. The Webster organization holds an interest in the test.

Webb County Strike Links Two Producing Areas

San Antonio, Texas.—An extension to two pools or the opening of an entirely new one in Webb County was effected by B. Rosenburg in M. Vela 1. The well is a 25,000,000-cubic foot gasser at 1824-32 feet.

It is located 479 feet from the north and 491 feet from the west line of Block 4, Survey 267, about four miles northeast of the Laurel pool and about half the distance west of the Carolina-Texas pool.

This is the second strike by Roesenburg in this immediate area this year, the other being the completion of high gravity oil wells from a 2200-foot sand in the Laurel pool.

Southwest Texas Field Developments

Completions

Company, Well and Location	Initial Production Bbls.	Depth
BELL COUNTY—		
Alex Krause, W. P. Edds 1, Maximo Moreno sur	*	712
COLORADO COUNTY—		
V. F. Neuhaus et al, M. C. Barnett 1, O. K. Winn sur	*	5250
DUVAL COUNTY—		
J. M. Anderson et al, J. F. Welder 1, Sec. 71	*	2545
H. H. Coffield, R. Wendt 4, Sec. 43	¶25-250	2260
Cole Pet. Co., Benavides 79, blk 12, Sec. 20	¶10	1723
Hamill & Hamill, C. W. Hahl 4, Sec. 42	620	2282
Humble O&R Co., Paul White 8, Sec. 58	444	2310
O. W. Killam, Bruni 23, blk. 34, Sec. 8, plug from 3039	*	2490
Mag. Pet. Co., Bryan White 2, Sec. 44	85	2300
C. G. Porter, J. T. Smith 1-A, Sec. 46	112	2290
Texas Co., Bishop Cattle 5, Sec. 135	200	2380
Whisenant-Trenchard-French, C. W. Hahl 3, Sec. 44	850	2330
McMULLEN COUNTY—		
Jacob, Buzzini & Pickett, Jacob 9-A, W. H. Jacob sur	150	968
MILAM COUNTY—		
Huff & Koch, J. W. Lee 1, D. Harmon sur	*	1492
STARR COUNTY—		
Allison & Doyle, C. Salinas 1, Share 15 B, Por. 80	*	1518
W. W. Covington, G. F. Carreon 1, Sec. 13, Tract 3	*	543
Sinclair-Culberson, Kelsey Bass 1, Sec. 5, Por. 75	*	481
Los Olmos O&G Co., Kelsey Bass 27, Sec. 7	30	467
Kelsey Bass 28, Sec. 7	30	452
Kelsey Bass 29, Sec. 7	20	439
WEBB COUNTY—		
B. Rosenburg, M. Vela 1, blk 4, Sur 267	¶25	1832

Wildcat Drilling Report

(Wells shut down not included)

ARANSAS COUNTY—Grayburg Oil Company's McCampbell 1, blk. 61, McCampbell Ranch lands, 3½ mi due n Aransas Pass, dk up, gas and water lines being built.

BASTROP COUNTY — American Liberty Oil Co.'s L. Davis 1, G. G. Stovall sur, mov on. Marts & Beavens' Smith 1, J. Burleson sur, prep to sp. Ogden & Reed's Miears 1, W. M. Leach sur, dr.

BEE COUNTY—Dirks Bros.' Fee 1, sec 3, 1-a mi w Tuleta field snd 4227-42 ft, show 80 ft mud and little gas 5 min dst, td 4297 ft, d&a. Grisham et al's Hill 1, 1½ mi sw Tuleta townsite, lcn. Gulf Coast Oil Co.'s Hicks-Hahl 5, Blk. 2, Uranga sur, Normanna, dr 3350 ft in blk shale. B. Mauldin's J. L. Mauldin 3, Geo. Kerr sur, lcn. Nichols & Bruner's Hedelfels 1, John Ryan sur, 3½ mi se Beeville, re-dr 2100 ft. O'Neill Howeth's J. P. Harris 1, Blk. 13, Sec. 13, Tuleta, sp. United Prod Corp.'s Geo. Ray 44, S. Morris sur, N. Nettus, snd 3675-81 ft, set and cement cas, woc. Wallace & Bowles' Harris 1, Sec. 13, Blk. 12, Tuleta, set 80 ft sur cas, re-dr.

BEXAR COUNTY—Wm. V. Ballard et al's S. A. Land & Dev. Co. 1, I. Perez sur, td 970 ft, fsh. Eckert & Son's L. Brehm 4, Boquar sur, sp. Robt. C. Hill's F. Schell 1, Sec. 234, Perretaux sur, dr 830 ft, last rept. R. V. Hill's M. & A. Boeck 1, 5 mi se Converse, J. F. Shepherd sur No. 314, show oil and gas abt 300 ft. Johnson Bros.' Elsei Janszen 1, J. Montez sur td 250 ft, sd for water. E. M. Jordan et al's Van A. Petty 1, I. Perez sur, sp. F. E. Kistler's Cover 1, Gotaris sur, sp. M. E. Trussell's R. T. Pruitt 1, County blk. 4299, 16 mi sw S. A., dr 385 ft. H. G. Venable's F. Dullnig 2, Eckert area, top snd 1060 ft, td 1100 ft, completing.

CALDWELL COUNTY — Cargill et al's Dameron 1, Dillard Cooper sur 3 mi s Lockhart, cas set 1774 ft, bailed dry in chalk 1829 ft, deepened to 1909 ft, now flow by heads. Louis Crouch's S. Nealson 1, John B. Gray sur, mov on. Slam Bang Con Co.'s (J. M. Dickson) W. T. Moobey 1, S. Seal sur, td 2200 ft, test 1 trebble mud and 3 trebbles oil, dst. E. D. Herne's Jeffrey 1, James George sur, set sur cas, prep to dr deeper. E. L. Hope & Joe Cole's M. August 1, A. Floyd sur, ru. J. W. Kemp's Vickery 1, Squire Damon sur, td 200 ft, plug to 1750 ft, set cas, woc. Jimmie Lanning's Barber 1, S. Damon sur, show oil in black lime and shale 2176-82 ft. D. V. Smith et al's McMahon 1, James Pinchback sur, 1½ mi ne Webster producers, set 80 ft 10-in, re-dr.

COMAL COUNTY—Caldwell & Lainer's T. J. Byler 1, sec 894, HE&WT sur, 10 mi se Blanco City, dr 935 ft.

DIMMIT COUNTY—Motes-Campbell Co.'s Denton 1, Tract 33-34, Blk. 60, Denton Colony sub, 12 mi sw Carrizo Springs, td 1400 ft, contract depth.

DUVAL COUNTY—Byrd Oil Corp.'s P. T. Wright 3, sec 101, ru. Capps & Smith's Duval County Ranch Co. 3-A, sec 574, set cas abt 2340 ft, woc. L. Capps' J. E. Williams 1, sec 7, blk. 1, ACH&B sur, lcn. H. H. Coffield's R. Wendt 5, sec 43, to make lcn. W. T. Daniels' F. J. Smith 1, sec 46, mov on. Hamill & Hamill's C. W. Hahl 5, sec 42, mov on. C. W. Hahl 6, sec 42, lcn. Highland Oil Co.'s A. Lundvall 3, sec 42, dr 2376 ft; A. Lundvall 4, lcn. Humble O&R Co.'s Paul White 9, sec 58, lcn; C. W. Hahl 1, sec 74, lcn. Mag. Pet. Co.'s A. A. Broadbeck 2, sec 44, ru. Payne & Vernon's A. Roach 1, blk 7, sec 457, ru. S.R.-&C. Oil Corp.'s Duval Ranch 1, sur 192, lcn. San Diego Oil Co.'s E. Riley 4, sec 46, prep to mov on; L. Bennett 2, sec 44, lcn; Sarnosa Oil Co.'s A. Weil 3, sec 130, Sarnosa, top snd 2374 ft, dr out plugs; A. Weil 4, sec 130, lcn. C. P. Scott 1, J. W. Kidd 1, sec 56, to start shortly. Southwest Dr. Co.'s R. Wendt 4, sec 43, lcn; R. Wendt 6, sec 43, top snd 2262 ft, td 2300 ft, completing. Sun Oil Co.'s Duval Ranch 1, No. 78, DI&A sur, 3 mi ne Gov't Wells, coring 2350 ft. Texas Co.'s C. W. Freer 1, sec 45, mov on.

FRIO COUNTY — Amerada Pet. Corp.'s Halff & Oppenheimer 1, W. F. Halsel sur, 12 mi sw Pearsall, new td 4385 ft, complete fsh job, re-dr.

GILLESPIE COUNTY—Rod Le Gra, Inc.'s W. H. Stephens 1, AB&M sur No. 969, dr 45 ft.

GOLIAD COUNTY—Plymouth Oil Co.'s A. M. Parks 3, lcn. Sam Vanderweiss 1, Vicienta Ramos sur, mov on.

GUADALUPE COUNTY — Suttle et al's Halm 2, Jose Kent sur, top Austin chalk 1598 ft, show oil and gas, now dr 1670 ft. Tong & Altgelt's H. Rahe 1, Mose Baker sur, between McQueeny & Marion, dr 600 ft. Walton et al's Dan Darling 1, Ben Fuqua sur, Manford area, sp.

JIM HOGG COUNTY—H. C. Cate's Leyendecker 1, sec 143, blk. 10, dr 500 ft. Cole Pet. Co.'s W. P. Allen 1, Halmuck Sub Bo. 1, Randado Grant, sec 13, sp. D. C. DeWitt's T. Gomez 1, sec 12, dr 2225 ft.

JIM WELLS COUNTY—Humble O&R Co.'s Fuhrman 1, Phillips Sacks sur, dk up, bldg water line. F. A. Lain's Vernon Porter 1, tract 25, make dst 3168 ft. J. E. Walsh et al's W. D. Wade 1, blk. B, Allen sur, lot 2, mov rig.

KARNES COUNTY—Porter et al's Ingram 1, Carlos Martinez sur, dr 2076 ft. A. E. Edmiston's G. W. Cross 1, M. N. Reed sur, mov on. Tippett & Mull's Smith 1, Francis Haskins sur, prep to sp.

KENDALL COUNTY—Verlans Trust Co.'s W. Werner 2, sec 782, blk 3, dk.

KERR COUNTY—Eastland Oil Co. et al's J. Love 1-C, CC&SD sur No. 1592, ru. Van Duyn & Moore's R. W. Nowlin 1, No. 99, J. E. Bettner sur, dr 375 ft. Verde O&G Co.'s J. D. Witt 1, Hamiliton sur, sec 1923, sd 118 ft for months, to be deepened.

LA SALLE COUNTY—Interstate Oil Industries, Inc.'s blk 20, I&GN sur No. 19, dr 2825 ft.

LIVE OAK COUNTY—C. J. Webster O&G Co.'s O. F. Akers 1, T. Henry sur, 6 mi w Three Rivers, sp and sd to work out titles.

MAVERICK COUNTY—Kivaga Oil Co. 1, sur 44, 2½ mi n Eagle Pass, making lcn.

McMULLEN COUNTY—Jacob, Buzzini & Pickett's Jacob 8-A, W. H. Jacob sur, dr out plugs 972 ft; Jacob 10-A, W. H. Jacob sur, lcn. V. G. Schimmel et al's Wulf 1, sec 65, Two Rivers Ranch sur, re-dr below sur cas. C. C. Shumway's Shiner 1 ,New Shumway sur, blk 45, sp. Skinner & Bailey's F. H. Burmeister 1, blk 1, GH&H sur, set 60 ft sur cas, last rept.

NUECES COUNTY—Capps & Smith's Hutchins 1, George Frank sur No. 416, ru. Gibson Oil Corp.'s R. Morgan 1, sec 405, BS&F sur, dr 3275 ft. Gulf Coast Oil Co.'s Bessie Elder 2, td 4554 ft, set cas, woc. Gulf Port Oil Co.'s Frank Bliss 3, J. W. Stevens sur, sec 406, lcn; Isencee 1, C. Land sur, dk; Isencee 2, Chas. Land sur No. 404, ru; John Luby 1, blk 1, sec 2, A. Collins sur, dr 4060 ft. Houston Oil Co.'s W. W. Walton 1, Rge 6, sec 9, dr 4715 ft. Miller et al's Harney 1, Gregoria Farias sur, mov in tools. George Noble et al's Home Land Syndicate 1, blk 18, sec 12, lcn. Saxet Gas Co.'s J. Dunn 9, E. Villereal sur, coring snd 3671 ft. O. R. Seagraves, Trustee's Perkins & Legasse 1, blk 22, Shepherd sur, dr 2325 ft. Titus & Calloway's Perkins & Legasse 1, blk 26, J. B. Shepherd sur, dr 3730 ft; Perkins & Legasse 2, blk 25, H. B. Shepherd sur, dr 2800 ft; Perkins & Legasse 3, blk 25, Shepherd sur, ru; R. Morgan 1, No. 405 sur, dk; K. Hutchins 1, blk 30, H. B. Shepherd sur, dr 2700 ft.

REFUGIO COUNTY—Gulf Prod. Co.'s Joe O'Conner 3, sw No. 2, ru. Humble O&R Co.'s M. V. O'Conner 3, F. Rios sur, snd 3136-48 ft, mudded in, pull tubing, blow out with gas from No. 2, showing oil and gas.

SAN PATRICIO COUNTY—Chiltipin O&G Co.'s E. H. Welder 1, blk 5, Portillo sur, dr 5290 ft.

STARR COUNTY—Austin & Reynolds' Kelsey Bass 1, sec 4, Por 75-76-77, lcn. B&B Oil Co.'s Kelsey Bass 1, Por 87, coring 2035 ft. Boyd Jones' Garza 1, Share 3, Por 75, mov on. D. H. Carpenter's Salinas 1, Por 38-39-40, share 85, dr 1450 ft. Jim Cloud's Sanches 1, sur 344, mov in rig. W. W. Covington's G. F. Carreon 1, sec 13, tract 3, por 75, lcn. Goodwin & Yantis' Seabury-Geo. & Taylor 1, Por 75, share 3, prep to sp. A. C. McGahhey's Fernandez Bros. 1, Por 99, sp. D. A. Miller et al's Madrigal 1, share 5, Por 67 to 72, dk. J. W. Seward's F. Dawson 1, blk 6, share 3-B, Por 70, lcn. C. L. Sinclair's Kelsey Bass 2, sur 5, Por 75-76-77, lcn; Kelsey Bass 1, sur 5, completing, top snd 432, td 440 ft. Jeffries-Lambert Dr. Co.'s Starr County Cattle Co., blk 34, share 89, dr 1100 ft, showing gas. Los Olmos O&G Co.'s Kelsey Bass 27, sec 7, completing 467-75; Kelsey Bass 28, sec 7, coring 440 ft. Tarver & Nance's Kelsey Bass 6, sec 76, blk 7, dr 250 ft. Hornaday & Porter's Kelsey Bass 1, sec 7, completing 458-66. Keck & Keane's Kelsey Bass 2, sec 6, lcn. Warner-Doyno's Seabury, George & Taylor 1, share 5, completing 389-94 ft.

UVALDE COUNTY—J. V. Scroggins et al's Fee 1, blk 471, dr 510 ft.

VICTORIA COUNTY — Cullen & West's Keeran 2, M. de Leon sur, dk. Gulf Prod. Co.'s Keeran 3, M. de Leon sur, dr 2100 ft. Houston Oil Co.'s W. T. Beck 2, lot D, I Ry sur No. 26, dr 3450 ft. Slick-Seeligson, Inc's McFadden 2, J. Varin sur, dr 6470 ft. Texas Co.'s A. M. McFadden 1, J. A. McFadden sur, sp. Union Oil Co.'s C. N. Keeran 2, M. de Leon sur, dr 4478 ft.

WEBB COUNTY — Foster Barnsley's F. Webster 2, sur 684, mov on. J. E. Edwards' M. D. Slator 1, blk 72, Slator sub, J. V. Borrego grant, dk. Hamill & Hamill's S. Loyd et al 1, blk 15, sur 23, ru. O. W. Killam's W. Breckenridge 1, blk 9 and 11, sur 771, mov on. Montez Oil Co.'s P. Rosenburg 1, sec 271, blk 5, sp. Sal-Mar Oil Co.'s Vala 1, blk 16, sur 1011, lcn. South Texas Oil Co.'s Laruel 1, sur 270, blk 10, sp.

ZAPATA COUNTY—H. Muckelroy Jr.'s A. Trevino 1, sec 411, blk 10, dr 2247 ft. Newton et al's Flores 1, sur 49, mov on. Huff & Fudge's Uribe 1, blk 8, share 7, par 6, Ignacio sub of Borrego grant, dr 586 ft, last rept. F. J. Ossenback's Ramirez 1, por 18, lcn. C. B. Bunte et al's Mrs. A. Gutierrez 1, tract 2, blk 5, B. F. Nixon sub of Borrego grant, por 10, dr 1450 ft. Texas Co.'s Jennings 15, Cerrito Blanco sur, dr 500 ft.

ZAVALLA COUNTY — Adair & Daniels' Gates 1, sur 13, re-dr 3218 ft.

Jacob Pool Pipe Line to Be Ready December 1

San Antonio, Texas.—Jacob, Buzzini & Pickett completed one well, was drilling in a second and was making a location for a third near the close of the week in the Jacob pool, McMullen County.

The producer was Jacob 9-A, which is flowing in the neighborhood of 150 barrels daily from 953-86. Plugs are being drilled at 972 feet, top of the sand, in Jacob 8-A. Jacob 10-A is being located several locations south of production. All wells are in the W. H. Jacob Survey.

Cardinal Pipe Line Company, a Jacob, Buzzini & Pickett organization, will be running oil through its seven-mile pipe line from this pool to loading racks to be built on the Missouri Pacific, one mile south of Whitsett by December 1. Work recently was started.

Saxet Field Workover Near Completion in Deeper Sand

San Antonio, Texas.—Another producer in the 4500-foot sand is expected in Saxet field, Nueces County, within the next few days. The well is Gulf Coast Oil Company's Bessie Elder 2, an old gasser deepened from 2742 feet. It is a total depth of 4554 feet and is drilling in. A number of other tests are near the sand, but the above well is the only one in process of completion.

Grayburg Will Make Deep Test in Aransas County

San Antonio, Texas.—The area known as the Rockport uplift, extending across Aransas County is to be given a deep test by Grayburg Oil Company. The location is on Block 61 of the McCampbell ranch, where the company has approximately 7300 acres in a solid block. The well, known as McCampbell 1, is about 3½ miles due north of Aransas Pass.

While the contract calls for a 5000-foot hole, it is expected to be carried much deeper if production is not found at a shallower depth. Derrick is being erected and water and gas lines laid.

Brenham, Texas.—Sun Oil Company's Schulte 1, which is the only test given the Clay Creek dome, Washington County, in many months, is coring brown shale at 1025 feet. Sun Oil Company is in full control of this shallow oil field, and is producing an average of 1200 barrels of oil daily from 27 wells. The production is moved in tank cars to the company's tanker terminals at Sun Station, near Beaumont.

GULF COASTAL FIELDS

Major Will Develop 1751 Acres in Conroe; Spurger Test Believed Too Low; Wharton County Test Shows Again.

WM. V. GROSS, *Staff Representative, Houston, Texas*

Tidal Enters Producers' Ranks in Conroe Field

Houston.—Activities in Conroe field, Montgomery County, were featured during the week by definite closing of transactions on one deal involving $500,000 cash for half interest in 665 acres, and by practical settlement of another which may involve about $1,000,000 for a similar interest in 1050 acres and a full interest in 36.42 acres, Tidal Oil Company being the purchaser in both instances from George W. Strake, discoverer of the field, and Heep Oil Corporation, respectively.

Under the deal with Strake, Tidal paid $500,000 cash for what amounts to practically a half-working interest in the 665-acre Lewis lease, situated south of the tract on which the discovery well of Conroe is located. Half the oil recovered from the lease during its life will belong to Strake.

Final settlement of details in connection with the Tidal's deal with Heep Oil Corporation had not been effected November 15, and the total consideration had not been agreed upon, according to an announcement of the latter. However, the leases which will be involved will total 1086.92 acres. Of this amount, Tidal is dealing for half interest in 1050.5 acres and for full interest in 36.42 acres. Eight leases make up the total acreage being bought from Heep. They embrace six oil wells and one gas well. The leases and acreage involved were: C. L. Dobbins, 100 acres; American National, 100; Moore, 100; R. L. Cartwright, 300; George W. Hamman, 232.5; Hooper, 58; Freeman, 36.42; and Brent, 160 acres.

Tidewater-Associated, parent of Tidal Oil Company, will build a gathering system in Conroe field and make use of The Texas Pipe Line Company's common carrier to transport Conroe crude to the Gulf Coast, from where a bulk of it will be shipped by tanker to the organization's refining base at Bayonne, New Jersey.

Acquisition of the Strake and Heep holdings places Tidal Oil Company in second rank at Conroe as to amount of proven acreage owned. Humble Oil & Refining Company ranks first.

Development at Conroe for the next few months, excepting routine drilling of proven leases, is expected to center on extending the southeasterly trend of production in the direction of the vicinity being played for a large, non-piercement type of salt domes. And in this connection, it was rumored in Houston late in the week that another $5,000,000 deal was pending, the offer being made by a major company. Mr. Strake is negotiating with unidentified parties for disposal of more of his acreage, but states the deal involves nothing like the amount rumored. George Bevier, also holding considerable acreage southeast of the original productive block, has been made some very substantial offers but has accepted none of them recently. Atlantic Oil Producing Company has played a prominent part in rumors of new entries for the field.

About 50 wells in Conroe are yielding around 27,000 barrels per day, with only one well in the field producing more than the allowable. The status of activity in the field is as follows: drilling wells, 25; rigs, 6; derricks, 13; locations, 6.

Spurger Wildcat Tests Salt Water When Deepened

Houston.—Republic Production Company and Houston Oil Company's Sterne Fee 1, discovery well of the Spurger area, Tyler County, showed 37 fourbles of salt water with an odor of oil and a faint show of gas when deepened from 4708 feet to 4779 feet and subjected to a drill stem test. The Halliburton tool, with three-eighths inch choke on top and none on bottom, was left open 14 minutes to test the formation at 4776-79 feet, which was shale with streaks of sand showing a little oil.

Stern Fee 1, which apparently was located too low on the structure to produce oil, is coring ahead below 4895 feet.

Sale of Polk County Lease Is Denied by Dick Schwab

Houston, Nov. 18.—Reports from Livingston that Dick Schwab, discoverer of deep gas production in Polk County, had acquired the 740-acre G. P. Reed tract in the Augustine Viesca Survey, a short distance north of the discovery well on the Davis tract, for $175,000 cash were denied today by Mr. Schwab. Negotiations for a deal were underway, he said, but no agreement could be reached.

Davis-Holmes 1, Schwab's second

test in the region, is drilling below 3600 feet after having set surface casing at 499 feet. Structurally it must be located about like Carlton-Davis 1, discovery well, as the top of the Hockleyensis was encountered between 3540 and 3550 feet. Carlton-Davis 1 was completed at 4311 feet in a sand estimated capable of 20 million cubic feet of gas per day. It furnishes fuel for drilling Davis-Holmes 1, and is yielding from six to 20 barrels of gasoline per day, depending on the temperature.

After completion of Schwab's drilling well, which should be within a fortnight, he will drill one well on each of four tracts before entertaining ideas of selling out, according to present plans.

The only projected test for the area outside of those planned by Schwab is the location of Abercrombie and Harrison in the John Swinney Survey, eight miles south of Livingston.

Regional High Played In San Jacinto County

Houston.—Leasing activity this week in the southeastern tip of San Jacinto County, the northeast corner of Liberty County and the southwestern tip of Polk County, roughly the area bounded on the north by Shepherd in San Jacinto, and on the south by Rayburn in Liberty, and lying just east of these two towns, involved prices for acreage high enough to remove same from the class of normal trend protectional takings. As much as $30 per acre for seven-eighths interest in oil rights is being paid.

Shell Petroleum Corporation has taken a block east of Shepherd. Further east in San Jacinto County, Sun Oil Company, Julius Fohs, and Sinclair Prairie interests have taken blocks.

The play is based on a regional high, and not a shoreline trend, nor on domal indications.

Pledger Well Completion Slated for November 19

Houston, Texas, Nov. 18.—Production test of Danciger Oil & Refining Company's W. S. Hunt 1, Brazoria County wildcat in the Pledger district having possibilities of ushering in a new Gulf Coast oil field, has been delayed until the November 19, according to official information received late today.

Hunt 1 is standing on a sand at 6758-82 feet which appears capable of yielding high gravity oil, according to oil scouts. Others predict the well will be a wet gasser.

United North and South Will Develop Buckeye Area

Houston. — United North & South Development Company, discoverer this fall of the new field near Buckeye Townsite in Matagorda County, has reversed the decision to sell its holdings on the Stoddard ranch and will develop the property with additional drilling.

The area will be subjected to further geological work before location for the second test is announced.

Stoddard 1 is producing 1500 barrels of fluid, 25 per cent of which is salt water coming into the well from below the packer. It was completed in the Oligiocene at 7926 feet at the discovery well of Buckeye field.

Edgar B. Davis, head of the United North & South, recently announced intention of auctioning off the company's holdings at Buckeye, stating at that time a minimum bid of $10,000,000 would be accepted. There were no buyers, subsequent rumors of a sale to Magnolia Petroleum Company and Humble Oil & Refining Company on a 50-50 basis being denied by all three organizations.

Wharton County Wildcat Records Another Gas Show

Houston. — As Smith and McDaniels' Mitchell 1 in Wharton County increases its depth, the potential value of land around the southwest quarter of H.&T.C. R.R. Survey No. 8, Abstract 661, seems to increase.

This week Mitchell 1, a project in which Shell Petroleum Corporation is financially interested, blew gas and tested 630 feet of salt water in four minutes when formation at 5432-88 feet was subjected to a drill stem test.

The well, located 2½ miles northeast of El Campo, previously has encountered relatively strong shows of gas at 3064-3121 feet, at 3170-3203 feet, at 3897 feet, at 3990-4067 feet, and at 4225-83 feet.

Mitchell 1 is coring below 5523 feet.

Colorado County Prospect Sale Unconfirmed

Houston. — Arthur Coyle of San Antonio, head of Coyle-Concord Oil Company, could not be reached Friday evening for confirmation of his reported sale of 15,000 acres in leases around wildcat gas well in Colorado County to Humble Oil & Refining Company.

Advice from San Antonio reported Mr. Coyle in Houston negotiating the deal which involved the area 10 miles south of Garwood where he obtained an 80 million cubic foot gas well early in July. The wildcat, known as Nelson 1, was completed at 4052 feet, topping the sand at 4021 feet. Closed in, the well showed tubing pressure of 1660 pounds and a casing pressure of 1675 pounds. It is located 3200 feet southeast of the northwest corner of Section 43, I.&G.N. R.R. Survey, and 2200 feet southwest at right angles.

The Coyle-Concord prospect was worked by torsion balance and magnetometer prior to drilling Nelson 1.

Cheek Wildcat Expects Marginulina Sand Soon

Houston.—Jack Schultz's O. M. Todd 2, wildcat test of Cheek dome in the William Carr Survey of Jefferson County, expects to pick up an oil sand in the Marginulina at about 6900 feet. The wildcat is drilling near the bottom of the heterostegina at 6480 feet, with paleontological correlations indicating it is running considerably higher than O. M. Todd 1, located 1800 feet north, which was abandoned in shale at 6906 feet after revealing domal conditions for the vicinity.

California Drilling Work Setting Low Year Record

Los Angeles.—Permits granted to drill new wells in California have fallen below the average estimates of last January, and the total for 1932 will not approach the total for 1931. Total new wells this year is 248, as compared with 329 at the same date last year. Aside from short runs during the spring months, the average weekly number this year has been very low. Estimates of 400 new wells were made by the more conservative statisticians, but the more optomistic engineers thought the number during 1932 might reach 500. Three hundred now appears to be about the proper estimate for the current year.

Several of the fields which accounted for good numbers of new wells during 1931 were almost wholly inactive during 1932.

Most of the new wells have been started in the partially developed fields and in promising wildcat districts. Santa Fe Springs, Long Beach, Huntington Beach and the older fields have been very inactive, while Kettleman Hills, Ventura Avenue and Fruitvale have given better accounts of themselves during an abnormal year.

The number of permits granted for new wells during 1932 probably will establish a new low record for recent years. New wells have been almost as widely scattered during the year as during former years, but the single tests have predominated, where it was not unusual to start several wells in semi-proven areas.

Rio Bravo Will Drill Another Test at Darrow

Houston, Nov. 18.—Considerable interest will be attached to drilling of Rio Bravo Oil Company's second location at Darrow dome, a geophysical prospect in Ascencion Parish, Louisiana, which the operator proved capable of producing commercial oil September 27 when Community 1 was completed at 4035 feet for an initial production of 100 barrels per hour.

The second test, to be known as S. Gamble Lumber Company 1, is 4450 feet west and 550 feet south of the northeast corner of Section 33-10s-2e, or approximately 1800 feet south and 600 feet west of the discovery well, which logged six shows of oil exclusive of the sand in which it was completed.

A pipe line is being laid from the lease to dock and loading racks on the Mississippi river, and construction work on a camp and warehouse is under way. There will be 18,000 barrels of storage facilities on the lease before completion of the second test.

Texas Gulf Coast Field Developments

Completions

Company, Well and Location	Initial Production Bbls.	Depth
CONROE FIELD—		
Hooper Oil Co.-Rutherford Oil Co., Hooper 2	1600	5077
Showres & Moncrief, R. R. Dunn Est. 1	2160	5127
Southland Oil Co., T. L. Cummins 1	315	5051
FORT BEND COUNTY—		
North Star Pet. Co., Guyler 1, Andrew Roberts sur	*	5204
HARRIS COUNTY—		
Koinm Prod. Co., Burt & Griffith 1, A. R. Bodman sur.	*	1020
HULL FIELD—		
D. & L. Oil Co., Hankamer & Pivito 1	145	4687
HUMBLE FIELD—		
Sun Oil Co., River 64	275	1292
MANVEL FIELD—		
The Texas Co., Ewing 2	164	4022
MATAGORDA COUNTY—		
Danciger O&R Co., Turner 1, M. Cummings sur.	*	40
MONTGOMERY COUNTY—		
Miller Prod. Co., Foster Lbr. Co. 1, M. B. Lawrence sur.	*	5021
NEWTON COUNTY—		
Sun Oil Co., Peavey-Moore Lbr. Co. 1, F. Stover No. 164 sur.	*	7222
NORTH DAYTON FIELD—		
Ferguson & Head, Quintette 1	8	1245
PIERCE JUNCTION FIELD—		
Moody Corp., Settegast 4-B (wo)	176	4436
Rock Drilling Co., Hooks 1	*	4388
RABB RIDGE FIELD—		
Humble O&R Co., Gulf Prod. Co., Lockwood 5	1200	5300
Lockwood & Sharp B-5	1080	5300
Lockwood & Sharp B-6	1320	5286
SOUR LAKE FIELD—		
Jackson Mineral Oil Co., Lulu Herbert 1	*	2885

LOUISIANA FIELDS

Wildcat Work Continues to Widen While Zwolle Has a Quiet Week. Change Location of Conroe Trend Play.

Humble Alters Line of Play For "Conroe Trend" East

Shreveport, La.—According to reports, Humble Oil Refining Company, which has approximately three million acres of long-time leases in the eastward "Conroe trend" through central Louisiana, Mississippi, and Alabama, has changed its leasing plans in Central Louisiana.

Heretofore Humble has been confining its leasing along a trend approximately 14 miles south of the Cockfield outcrop in Central Louisiana, but new orders, it is said, have been issued to lease 28 miles south of this outcrop. In absence of a known reason for this, two theories have been advanced for this action: first, Conroe, Sunshine Dome, and Spurger are all approximately the same distance south from the Cockfield-Jackson surface contact; secondly, possibly recent geophysical surveys have indicated the southern trend to be more promising.

It is noticeable that Humble has leased no land in this "play" from Long-Bell Lumber Company, one of the largest fee holders in this part of Central Louisiana. It is said that Long-Bell considers no offers except those with a drilling obligation and Humble, it appears, cares to drill no immediate tests under drilling obligations and has confined its investments to long-time leases.

Long-Bell Lumber Company has just leased 15,000 acres in Beauregard Parish to M. I. Richardson, trustee, who is said to represent M. E. Trapp and J. J. Julian et al. The consideration for the block was a 3000-foot test to be spudded by December 16 and a $5000 performance bond has been posted.

Lincoln Parish Test Going Ahead After Showing Water

Shreveport, La.—Loring Oil Company (Benedum and Trees) drilling a 4300-foot test, Dubach Lumber Company 1, SE NE Section 25-20-4w, Lincoln Parish, tested 25 fourbles of salt water in 15 minutes in a drill stem test last week. It is in the Blossom sand that was logged at 2618 feet and is now drilling below 3000 feet. This well which has elevation of 121 feet logged base of Annona chalk at 2374 feet one foot lower than Arkansas Fuel Oil Company's Lewis 1, Section 26-20-4w, 1½ miles west of present test. Lewis 1 showed much gas in the top of the upper Trinity.

Loring Oil Company's test is 10 miles northeast of Sugar Creek where gas is produced from the Upper Trinity at 4300 feet.

Zwolle Has No Completions But Starts Six New Ones

Shreveport, La.—Zwolle failed to record a producer for the week ending November 16 but added six new locations, three in the "hot spot" recently opened in the northeast edge of the east field in Sections 30, 31-, 32- and 33-8-11, two in the southeast part of the field and an edge test in the east edge of production.

Location Made for Test on Big DeSoto Parish Block

Shreveport, La.—George L. Pace during the past week made location for John Cale 1, SE NE Section 11-11-11, DeSoto Parish, on a 4000-acre wildcat block this operator recently assembled for a 3500-foot test. This block joins up with a 5000-acre block assembled last summer by Aleene Ibach, trustee, for a 3500-foot test in Rambin Estate 1, NW NE NE Section 32-11-11, which Pace has drilling contract for and on which he spudded during the last week. Both tests will explore producing possibilities of the Nacatosh, Blossom and Tokio formations.

Push Geophysical Work South of Urania Field

Alexandria, La.—Both magnetometer survey and torsion balance work have just been charted on a big regional nose extending from the Urania oil field in LaSalle Parish (producer from the Claiborne-Wilcox contact at 1500 feet), south to the vicinity of Marksville, Avoyelles Parish, in an attempt to find local "highs." Starting of this work was probably accelerated by announcement of location in center of a 10,000-acre block for a 3500-foot test by Petroleum Industries, Inc., for Lee Lumber Company 1, Section 13-5n-2e, which is in the east play for the Conroe trend that is extending through Central Louisiana between the Gulf Coastal Plain and the Angelina-Caldwell flexure.

Assemble Block East of Haynesville for Deep Test

Shreveport, La.—M. H. Marr and O. G. Collins of Shreveport have blocked 6000 acres centering around Section 27-23-7w, Claiborne Parish, east of Haynesville, for a 5000-foot test which must be spudded within the next six months. Production in the Haynesville oil field uncovered in 1921 is from the Blossom around 2400 feet. This field is in township 23 range 8 west. Marr and Collins recently sold 12,000 acres of wildcat leases centering in Section 18-21-4w, Claiborne Parish, to United Gas Public Service Company for $36,000 cash and assumption of an obligation to spud a 4500-foot test before January 1.

Marion County Well Going On After Long Shut-Down

Shreveport, La.—Possibilities of production in both the Blossom and Cartersville sands in Marion County, East Texas, as well as an attempt to find production in the Woodbine, will be tested in Mrs. Mamie Hammett's Lindsay 1, Alex Albright survey, which has just been taken over by Green Smitherman and associates of Shreveport. This test has been shut down for over a year at 2327 feet, seven feet in Pecan Gap chalk.

The Cartersville is a sand in the lower Taylor between the Blossom and the Austin Chalk and its nomenclature was given it by M. W. Grimm, Shreveport geologist. Both the Blossom and Cartersville sands were found by Smitherman in several tests he drilled in Upshur County. This test is also near several wells that showed Woodbine sand but it did not carry commercial production.

El Dorado, Ark.—Two new locations, one in North Arkansas, and the other in south Arkansas, both wildcats, were announced in this state during the week ending November 16. Rainbow Oil & Gas Company has derrick up for Berry 1, SE NE NE Section 16-5n-24w, Yell County, and Graves and Associates have derrick up for Patterson 1, SW NE NE Section 31-19-16, a Union County wildcat.

Louisiana Gulf Coast Field Developments

Completions

Company, Well and Location	Initial Production Bbls.	Depth
PORT BARRE FIELD—		
Gulf Refining Co., Wilson-Cochran 2, (wo)	1600	3471

North Louisiana Field Developments

Completions

Company, Well and Location	Initial Production Bbls.	Depth
CADDO PARISH—		
Shreveport Oil Corp., Muslow 5, 32-21-15	25	2134
CALDWELL PARISH—		
Carter Bell et al, A. R. Taylor 1, 17-14-4e	*	3712
SABINE PARISH (ZWOLLE)—		
Frank Melat, Davis 1, 2-7-11	*	2680
Coates Pet. Co., Gray 1, 3-7-13	*	2650

New Operations

ASCENSION PARISH—Rio Bravo Oil Co., Houston, Texas, S. Gamble & Co. Ltd. 1, 33-10s-2, 1850 ft n and 4140 ft w from most easterly ne cor sec.

DE SOTO PARISH—Aleene Ibach, Shreveport, Rambin 1, 32-11n-11w, 250 ft s and e nw cor ne¼ sec.

JEFFERSON DAVIS—Shell Pet. Corp., St. Louis, Mo., A. O. Fontenot 3, 7-9s-6w, 1609 ft n and 330 ft e from sw cor sec.

SABINE PARISH—E. M. Thomasson, Denver, Colo., W. & H. Andries 1, 22-7n-11w, 500 ft n and 150 ft w cen of sec. C. E. Bruley et al, Many, W. H. Brumley 1, 2-7n-11w, 330 ft n and 330 ft w se cor nw¼ nw¼ sec. The Texas Co., Shreveport, E. N. Stille 4, 33-8n-11w, 530 ft e and 330 ft n sw cor sec. Beene Prod. Co., Inc., Shreveport, Cutrer 1, 12-7n-11w, 330 ft n and e from w¼ cor sec. Henry Rockmill, Ft. Worth, Texas, A. Patrick 1, 21-9n-13w, 330 ft s and e nw cor e½ sw¼ sec; Cooper 1, 31-8n-11w, 330 ft s and 297 ft e nw cor ne¼ sec. Alexander & Mason, Shreveport, Colonial Oil Corp., J. D. Williams 2, 13-7n-11w, 1045 ft s and 210 ft e from nw cor se¼ nw¼ sec. Mag. Pet. Co., Shreveport, J. M. Cooper 1, 30-8n-11w, 250 ft s and 350 ft w ne cor ne¼ sw¼ sec. H. C. Lessenger, Shreveport, Bowman-Hicks 1, 13-9n-13w, 330 ft s and e from nw cor sw¼ sec. R. T. Henderson, Longview, J. E. Sistruck 1, 9-9n-12w, 450 ft n and 150 ft w cen of sec. W. F. Lacy, Shreveport, W. M. Cooper 3, 30-8n-11w, 183 ft n and 830 ft w se cor sw¼ ne¼ sec.

Wildcat Drilling Report

(Wells shut down not included)

BIENVILLE PARISH—Black Lake Dev. Co., Petty Stave Co. 1, nw nw 19-18-6w, sd 2500 ft. Robt. S. Ross, Beck 1, ne ne 3-18-8w, dk.

BOSSIER PARISH—Belmont Oil Co., Edwards 1, sw ne 12-18-12, tested sw, arr abn, td 1100 ft. A. W. Phillips, Tr., Oden 1, nw nw 4-18-13, 10-inch 100 ft, dr 200 ft. Plain Dealing O&G Co., Nattin 1, 14-22-14, arr test, td 2965 ft. Steckol & Breazeale, Nattin 1, sw ne 15-22-14, 6-inch cas 2998 ft, arr dr plug. Steckol & Breazeale, Nattin 2, nw ne 22-22-14, dk. Texana Oil Co., Alford 1, 10-18-11, dr shale 1300 ft.

CADDO PARISH — Bolinger & Walker, Thompson 1, 16-22-14, dk. Caddo Prairie Dev. Co., Nicholson 1, ne sw 10-22-15, dr 2000 ft.

CLAIBORNE PARISH—Webster O&G Co., Smith 1, 8-21-7w, sd 1400 ft.

DE SOTO PARISH — DeSoto Dev. Co., Nickie 1, 7-13-12, rig. Honeycutt O&G Co., Porter 1, 26-12-13, core 2600 ft. Mrs. Aleene Ibach, Tr., Rambin Est. 1, nw ne 32-11-11, sp 10-inch 120 ft. E. T. Oakes, Johnson 1, 30-13-15, core 4335 ft. Geo. L. Pace, Jno. Cale 1, se ne 11-11-11, materials. Potter et al, Dowling 1, 31-14-14, arr to set cas, td 3068 ft. Walters & Nicholson, Jim Guy 1, 3-11-13, wosr, td 2767 ft. Warren & Craig, Wagner 1, 5-12-14, 10-inch cas 100 ft. Jack Whitson, Sanders 1, sw sw 19-11-13, wo 1950 ft.

GRANT PARISH — A. W. Phillips, Tr., Cameron 1, se ne 27-7n-3w, rig. Robichaux et al, Bradford 1, 16-9-1e, rig.

LINCOLN PARISH—Benedum & Trees, Dubach Lbr. Co. 1, se ne 25-20-4e, elev 121 ft, dr 3550 ft.

MOREHOUSE PARISH — Feazel & Kalil, Davenport 1, 28-21-6e, arr res 2510 ft. H. W. Snowden, Meyers 1, ne ne 15-22-7e, 10-inch 40 ft.

NATCHITOCHES PARISH — Allender & Rasmussen Oil Co., Cane River Valley 1, se se 61-6n-5w, dr 100 ft. J. B. Oil Co., Hankins 1, 67-10-7w, sr 525 ft. Natchitoches Pet. Co., Edenborn 1, 4-11-6w, sd 2220 ft. Saline Bayou Dev. Co., Bodcaw Lbr. Co. 1, 9-12-5w, sd 2610 ft. Texana Oil Co., Clarke-Morse 2, 23-5-6w, 6⅝ cas 3350 ft, arr test, td 3475 ft.

RAPIDES PARISH—Petroleum Industries, Inc., Lee Lbr. Co. 1, sw nw se 13-5n-2e, materials.

SABINE PARISH—Alford & Cleary Bros., Jackson 1, se nw 10-9-13, lcn. Alfred & Cleary Bros., Patrick 1, sw ne 11-9-13, lcn. Alford & Cleary Bros., Patrick 2, sw ne 11-9-13, lcn. Barbare et al, Ryals 1, nw nw 27-9-13, sp 10-in 40 ft, dr 100 ft. C. M. F. Oil Co., Aaron & Musser 1, nw nw 32-9-13, rig. R. L. Gay, Tr., Long-Bell A-1, nw nw 10-8-13, dr 6745 ft. Gibson-Johnson & Higgins, Frost Lbr. Co. 2, 15-9-13, bailed with good show oil and gas at 1516 ft, core 1526 ft. R. T. Henderson, Sistrunk 1, 9-9-12, lcn. Lee & Burnett, Burkett 1, nw sw 10-9-13, elev 204 ft, 10-inch 61 ft, base Midway 1472 ft, claim show gas, td 1516 ft. LeGrand & Jackson, McGough 1, 2-8-10, arr res, td 2200 ft. C. D. Loe, Tr., Whitney Corp. 1, nw ne 12-9-14, dr 800 ft. Loring Oil Co., Bowman-Hicks 21, 16-7-12, elev 247 ft, core 4725 ft. H. C. Maulding, Moores 1, 16-7-13, wo 2490 ft. Ben Merritt, Lucius 1, sw ne 4-5n-12w, dk. M. W. Ransom, Simpson 1, 30-7-10, dk. Roshko & Labarre, Maines 1, se ne 35-8-11, 12½ cas 100 ft. Rockmill et al, Bowman-Hicks 1, ne nw 36-9-14, move in rig. Rockmill et al, A. Patrick 1, ne sw 21-9-13, dk. Sabine Prod. Co., Whitney Corp. 1, sw sw 4-9-13, dr 1470 ft. Sanfield Oil Co., Bowman-Hicks 1, ne ne 26-9-13, elev 302 ft, arr dr plug in 8¼ cas cemtd at 1707 ft, td 1709 ft. Service Drilling & Roy. Corp., Whitney Corp. 1, se se 32-10-13, rig. E. M. Self, G. I. Paul 1, ne sw 9-9-13, dk. Simmons et al, Fleming 1, se se 11-8-13, rig. C. W. Smith et al, Pattison 1, 30-10-11, rig. W. M. Ungerman, Cross 1, sw se 25-8-11, rig. Ben Youngblood et al, A. J. Burkett 1, ne nw 10-9-13, dk.

UNION PARISH—E. S. Goens, Frost Lbr. Co. 1, 17-22-2e, rig. Wing Hong, Tr., Union Sawmill 1, se se 15-22-1e, 10-inch 70 ft. Wingfield et al, Union Sawmill 1, sw sw 27-23-1e, sp 10-inch 150 ft.

WEBSTER PARISH—Silvey et al, Drake 1, 14-19-10, rig.

WEST CARROLL PARISH—Mamie S. McCurrie et al, Richardson & Donnan 1, 13-19n-9e, rig.

WINN PARISH—P. V. T. Oil Co., Southern Adv. Paper Co. 1, nw sw 28-13-5w, wo cas 1125 ft.

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ARKANSAS FIELDS

Miller County Test Between Two Producers Is Failure

Texarkana, Ark.—W. S. King's E. L. Beck 1, NE NW Section 35-15-26, Miller County, Arkansas, between the two small producing oil wells in that county, one recently completed, and the other brought in two years ago, has apparently missed the sand lenses that yielded oil in the two producers at the 2800- and 2900-foot levels and is shut down in red beds at 3210 feet.

The producer completed several weeks ago was Fitzwater and Associates' E. L. Beck 1, Section 33-15-26, and the well added two years ago was C. V. Lenz' Johnson 3, Section 24-15-26. Each was good for about 25 barrels daily.

Two wells last week were looking for the pay sand, Dennis and Cubbage's Head 1, SW SW Section 20-15-25, coring at 2815 feet, and Lenz and Associates' Arthur Dean 1, NE SE Section 19-15-25, drilling at 2800 feet.

Fox and Langford's Coleman Brothers 1, SE SE Section 25-16-25, LaFayette County, showed salt water in a drill stem test in Blossom at 2740 feet and later was drilling at 2780 feet; elevation is 225 feet.

Arkansas Field Developments

Wildcat Drilling Report

(Wells shut down not included)

CLEBURNE COUNTY — Fred S. Craver, Donithan Lbr. Co. 1, sw sw 34-11-9, dr 3000 ft.

LA FAYETTE COUNTY—Fox & Langford, Coleman Bros. 1, se se 25-16-25, elev 225 ft, tested sw 2740 ft, dr 2780 ft. Chas. McDonald, Allen 1, 11-19-26, sd 1950 ft. Sam Wilson, Jr., Smith 1, nw se 24-19-25, rig.

LITTLE RIVER COUNTY — American Portland Cement Co., Fee 1, sw ne 21-12s-32w, dr 550 ft. M. E. Sanderson, Hale 1, se se 22-12s-29w, dr 1050 ft.

MILLER COUNTY—Roy Baker et al (formerly Fitzwater et al), E. L. Beck 1, sw se 33-15-26, rig. Dennis & Cubbage, Head 1, sw sw 20-15-26, core 2815 ft. Duluth-Ark. Oil Co., Beck 1, nw sw 34-15-26, dr 1900 ft. Fitzwater et al, C. J. Norsen 1, se sw 20-15-27, sd 1945 ft. W. S. King, E. L. Beck 1, ne nw 35-15-26, sd 3210 ft. Lenz et al, Arthur Dean 1, nw se 19-15-25, dr 2800 ft. Pederson et al, Fouke 1, ne ne 11-17-27, 10-105 ft (formerly Fitzwater et al). Jno. C. Rogers, Price 1, 17-16-25, rig. Bob Simmons, Lamb 1, 14-16-27, dk. Sorrells & Tidwell, McCowan 1, nw se 22-15-28, sd 400 ft (formerly Goodwin et al).

ST. FRANCIS COUNTY — Kentucky-Ark. O&G Co., Inc., Britton 1, ne nw 1-4n-1e, dr 3760 ft.

UNION COUNTY—Mamie S. McCurry et al, Rowland 1, sw sw 9-19-11, rig. Graves et al, Patterson 1, ne ne 31-19-16, dk.

WOODRUFF COUNTY—B. F. Thompson, Rosser 1, se se 7-5n-2w, dr 510 ft.

NEW MEXICO . . . ROCKY MOUNTAIN

Cut Bank Production Gets Extension; Unusual Activity in Field for This Season.

11 Operations at Cut Bank And More Due to Start

Cut Bank, Mont.—The Cut Bank field's list of completed producing oil wells is receiving a material addition in the near-completions of three tests which have tapped the oil producing sand. Of particular interest because of the material extension it proved to the area is Montana Power Company's Simereo 1, Section 5-33-5w, which at 2749-50 feet had 600 feet of oil standing in the hole. The casing was run and cemented and the well should now be drilling in preparatory to making its test on the pump. This well is 2½ miles north and east of the corporate limits of the town of Cut Bank and five miles southeast of Roy Tarrant's Haglund 1.

Two more wells drilled into production soon after Simereo 1 tapped the pay. Santa Rita Oil Company's Yunck 1, NE NW NE Section 23-34-6w, reported 1000 feet of oil in the hole from a sand at 2853-60 feet. Casing was run and test will be put on production this week. Roy Tarrant's Yunck 1, NW NW Section 12-34-6w, reported 2000 feet of oil in the hole from a sand at 2775-80 feet. This well also should make its production test this week.

There are 11 additional operations either under way or moving in to start up in the Cut Bank field. It is understood that several operators have taken up considerable additional acreage in the new territory and that it is expected that several new wells will be started soon.

Big Muddy Test Will Be Carried to Sundance Sand

Glenrock, Wyo.—Ohio Oil Company is changing from rotary to cable tools to drill a little deeper in the Kinney 25, SE Section 4-33-76, in the Big Muddy field, east of Casper, in Converse County, Wyoming. This well is bottomed on top of the Dakota formation at 4326 feet and was allowed to stand about a week while the company moved over to No. 26 location to drill a shallow well. After standing six or seven days the hole filled up with crude which eventually started slopping over the top of the casing. Tubing was run and the well has been producing about 10 barrels per day. It is now decided to clean out and drill a little deeper into the sand. Before allowing the well to stand there was no indication of production reported.

Continental Oil Company found no production in the sand in Glenrock Sheep Company 30 on SE Section 4-33n-76w,

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and this well is now headed for the Sundance—the first operation in Big Muddy field ever to be carried to this lower horizon.

Colorado Test Going Deeper After Good Show of Wet Gas

Denver, Colo.—It has been decided to drill Ramsey Petroleum Corporation's Tighe 1, SE Section 15-7n-59, in the New Raymer-Buckingham district (northeast of the Greasewood field in northeastern Colorado) deeper from 6695 feet where it made such a good showing of wet gas gauged at 6,300,000 cubic feet. It was allowed to blow for five days in an effort to make an oil well of it; then it was decided that deeper drilling might do the work. There is a variance of opinion concerning the sand from which the production came, some geologists believing that it is the Muddy while others insist that it is the Dakota.

In the Greasewood Flats field to the southwest Ohio Oil Company is completing Butters 1, Section 7-6n-60, after swabbing 20 barrels per day through tubing from the Muddy sand at 6685-90 feet. It is estimated that it will produce 40 to 50 barrels per day on the pump. This well was drilled to the Dakota sand, topped at 6685 feet, developed water there, and was plugged back.

Rocky Mountain Field Developments

COLORADO
Completions

Company, Well and Location	Initial Production Bbls.	Depth
RIO BLANCO COUNTY (Piceance Creek structure)—		
Magnolia Petroleum Co., 1, nw nw sw 15-2s-96w	¶8¼	2958

(This is a temporary completion).

Wildcat Drilling Report

(Wells shut down not included)

ADAMS COUNTY—Hills Dome Lease Dev. Co., se 27-3s-68w, dr out cement 4119 ft.

DELTA COUNTY—Black Canyon O&G Co., Lot 12, 5-15s-94, install larger rig 330 ft.

ELBERT COUNTY—J. M. Botts, se 7-8n-58w, dr below 4250 ft.

EL PASO COUNTY—Gulf States Oil Corp., Carson 2, ne 10-16s-66w, dr out plug 2000 ft.

LA PLATA COUNTY—McGarr Pete Co.'s Pinon Mesa 1, ne 34-33n-12, rig up. J. W. Irwin & Co., Doescher 1, nw 29-33-13, dr out plug, small show, to dd 3171 ft.

LAS ANIMAS COUNTY — P. W. Harr, Schneider 1, sw se se 10-33s-63w, completed contract, to dd 2010 ft.

LINCOLN COUNTY — Eastern Colo, Oil Corp., State 1, nw 36-14s-57w, hfw, from Dakota 3464 ft.

MOFFAT COUNTY—W. A. Myers et al, sw sw 16-4n-101w, sd for winter, td (corrected) 3250 ft.

MONTROSE COUNTY—Uncompahgre O. & G. Co., Vandemark 2, 27-50n-10, resume 800 ft.

ROUTT COUNTY—Mid-Colorado Pete Co., Omholt 1, se 29-4n-87, cem cave, est 2M gas at 1917 ft.

WASHINGTON COUNTY — Akron O&G Co., Gilchrist 1, 22-3n-53, bldg derrick.

WELD COUNTY—Reiter-Foster Oil Corp., Wilson 1, ne se 24-6n-61w, rigging up rotary 400 ft. Ohio Oil Co., Butters 1, 7-6n-60w, to pump from Muddy 6690 ft. Ramsey Petroleum Corp., Tighe 1, sw ne se 15-7n-59w, dd 6697 ft.

MONTANA
Wildcat Drilling Report

(Wells shut down not included)

CARBON COUNTY—Corbett Royalty Co., Co., 2, se 15-7s-23e, dr 1235 ft. sw se 1-6s-23e, dr 1225 ft. Jack Creek O&G

FERGUS COUNTY—Melton Corporation, 1, sw 24-21n-17e, ur 6¼-inch for wso, to dd from 3305 ft.

GALLATIN COUNTY — Montana Gas & Pete Corp., Adams 1, 35-1n-2e, dr 1700 ft.

GLACIER COUNTY—Tarrant et al, Yunck 1, nw nw 12-34-6w, swbg to test 2750 ft. Tarrant et al, Reickhoff 1, ne 3-34-6w, prep to put on pump to test 2962 ft. Montana Power Co., Simereo 1, n½ 5-33n-5w, prep to pump 2750 ft.

GOLDEN VALLEY COUNTY — Golden Valley Oil Co., 2-6n-22, co after set 8¼-inch at 3400 ft.

HILL COUNTY—Fargo Oil & Gas, 29-37n-15e, sd 875 ft.

LIBERTY COUNTY—Peoples O&G Co., nw 17-35-6e, dr 2770 ft. Dohm et al, Millen 1, sw 10-37-5e, fsh 295 ft.

SWEETGRASS COUNTY—Shoshone Consolidated Oil Co., nw nw 23-2n-15e, dr bel 6000 ft.

TOOLE COUNTY—Liquid Gold Oil Co., 1, 25-36-1e, set cas at 2644 ft, dr 2660 ft.

VALLEY COUNTY—Opheim O&G Co., ne 28-37n-38e, sd temp., 1000 ft.

YELLOWSTONE COUNTY—Peter Antonioli, ne ne 2-2n-25e, casing on hand, ready to run 2370 ft. Rice-Fulton et al, 20-2n-23e, dr 110 ft.

WYOMING
Wildcat Drilling Report

(Wells shut down not included)

CROOK COUNTY—St. Onge O&G Co., ne se 20-53n-61w, dr 450 ft. McWethy et al, 1, 1-49n-67, dr 600 ft. Holden & Lawrence Refining Co., nw sw 25-39-67, mvg in.

FREMONT COUNTY—Ward O&G Co., 28-34-90, fsh bit at 2100 ft, td 4050 ft. Yellowstone Oil Co., Gabus 1, sw 14-38-94w, sd for winter 2210 ft.

LINCOLN COUNTY—H. C. Harris et al, se 14-21n-117e, stand in gray lime 1507 ft.

NATRONA COUNTY—Mutual Oil Synd., Midway 2, sw se 14-36-79, run tubing to test 6076 ft. Summit Oil Co., Trevett 1, 21-33-80, dr hard formation 1705 ft.

PLATTE COUNTY—T. B. Oberman, nw se 30-21-68, dr in lime 110 ft.

WASHAKIE COUNTY — Bales Oil Trust, Brome 1, ne nw 13-48n-90w, prep to pump 1430 ft.

WESTON COUNTY—Julius Peters et al, Weitzell 1, nw 30-46-64, waiting to test 4590 ft. Gose Syndicate, ne 28-37n-63w, ur 6-inch, td 5050 ft.

NEW MEXICO
Completions

Company, Well and Location	Initial Production Bbls.	Depth
ARTESIA-EDDY COUNTY—		
Flynn-Welch & Yates, State 63	18	2196
Leonard & Levers, State 8	¶¼	2280
HOBBS-LEA COUNTY—		
Humble O&R Co., Bowers 1-B	¶8-12,875	4221
Shell Pet. Corp., McKinley 3-B,	¶8¼-5568	4205

Wildcat Drilling Report

BERNALILLO COUNTY—Norrins Realty, Pajarito Grant 1, 22-9n-1e, standardizing 3559 ft. Norrins Realty, Galegas Grant 1, 19-11-4e, dr 100 ft.

CHAVES COUNTY—R. D. Compton, sw se 20-10s-24, sd to hunt deer, td 1730 ft. Warman Oil Trust, Weldon & Hoar, se 9-14s-25e, dr in red beds 164 ft.

DE BACA COUNTY—Landowners Oil Co., State 1, ne 16-1s-27e, sd for pipe 5222 ft.

DONA ANA COUNTY—Middle States O. & G. Co., Boretzi 1, 14-36-5e, rig up. Viking O&G Co., sw nw 26-35-5e, dr bel 250 ft.

GUADALUPE COUNTY—N. M. Prod. & Ref. Co., McMillan 1, 24-5n-16e, wait for orders 4507 ft. N. M. Explor. Co., Ltd., Anton Chico Grant 1, sw 20-9n-17, dr 350 ft.

RIO ARRIBA COUNTY—Pan State Oil Co., 26-3s-1e, rigging up.

ROOSEVELT COUNTY — Peterson et al, Good 1, se nw 32-5s-30e, rig up.

SAN MIGUEL COUNTY—Cabra Springs O&G Co., Thompson 2, ne 22-12-22, temp sd 410 ft.

SANTA FE COUNTY—Kelsey Clients Dev. Est., 1, 26-10n-10e, work with 8¼-in. at 861 ft.

VALENCIA COUNTY — Homer G. Mills, Inc., Tome 1, nw sw 29-6n-3e, sd 500 ft. Western Nat'l Resources Corp., Inc., San Clemente Grant 2, ne 5-6n-1e, fsh 2115 ft. Gravity Petroleum Co., Clara R. Reed 1, 30-11-9w, cellar completed.

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Southeastern States

Report of Oil Show in Georgia Well Unconfirmed

Atlanta, Ga.—Altamaha Oil & Gas Company's Home Realty Company 2, northwest corner of Land Lot 637, Second Land District, Jeff Davis County, Georgia, picked up five feet of brownish gray sand at 705 feet and is now shut down five feet in the sand waiting arrangements for five-inch casing. The sand is probably of Caliborne age. Elevation is 99 feet. Reports of a small show of oil in the sand has not been verified. Ten-inch casing was cemented in this hole at 230 feet and eight-inch at 400 feet. The latter string is reported to have burst collar and crimped bottom joint. No. 1 well on the same lease about 1000 feet north of present test was reported to have been junked at 350 feet. The present test is a cable tool job.

Among those said to be interested in the company drilling this well are: John C. Stanley of Fort Worth, Texas, and Miami, Florida, and John B. Phelps, Leo Fritz and Joe Lipop, the latter three of Miami.

Gulf Starts Drilling On Big Block in Mississippi

Biloxi, Miss.—Gulf Refining Company during the past week made location for its first test on a 295,000 acre block of wildcat acreage in southeast Mississippi, located in parts of Jackson, Harrison, Hancock, Stone, Perry, George and Greene counties. The test is Dantzler Lumber Company 1, Section 27-4s-8w, Jackson County, just across Biloxi River from Biloxi. Gulf Refining Company has large holdings in South Mississippi and Southwest Alabama. It was the first major company to enter the Jackson gas field.

The location was made by C. M. Dorchester of Jackson, geologist for Gulf Refining Company, who was the discovering geologist of the Richland Parish, Louisiana gas field opened in 1926.

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Second Converse Well Shows for Pumper

Shreveport, La. — Although Gibson-Johnson & Higgins' Frost Lumber Company 2, NE NW NE Section 15-9-13, 3½ miles northeast of the single producer in the new Converse district of Sabine Parish, showed indications of making a pumper at 1516 feet, two feet in sand or sandy marl, after bailing and swabbing for two days without getting the well to flow operators started coring ahead and Wednesday, November 16, took a 10-foot core. Standing overnight during bailing at 1516 feet 600 feet of oil rose in hole.

Meanwhile Lee & Burnett's A. J. Burkett 1, NW SW Section 10-9-13, is reported to have reached base of Midway at 1472 feet; elevation is 204 feet. At 1516 feet it showed gas and preparations are being made for a test.

Only two new locations were made in Converse during the week bringing the total there to 16.

New Company Starting Southwest Mississippi Test

Jackson, Mississippi.—Two locations in the Jackson gas field, one in Rankin and one in Hinds County, were announced during the week ending November 16. One gasser was completed during the week, Love Petroleum Company's E. L. Spann 1, Section 13-5-1e, Rankin County, in the southeast part of the field estimated to be making 35 million cubic feet of gas from 2340 feet, in Midway chalk.

Foster Creek Oil Corporation, recently organized at Baton Rouge, Louisiana, and which has a block of Foster Creek Lumber Company land in Wilkinson County, southwest Mississippi, made location for a test in NW NW Section 12-2n-2w. Humble Oil & Refining Company has a large block in this county as does Arkansas Fuel Oil Company.

The Hinds County location in Jackson is United Gas Public Service Company's Fondren 1, NW SE Section 24-6n-1e on the north edge of the field. In Rankin County J. A. Baker and associates are rigging up for Rankinside Development Company 2, SW NW Section 6-5n-2e, in the east edge of the field.

Run Casing to Test Show Of Oil in Jackson Well

Jackson, Mississippi.—Casing is being run by J. A. Matson and associates in Warner 1, Section 14-5-1e, Rankin County, in the southeast edge of the Jackson gas field, after a drill stem test in four feet of chalk at top of the Midway chalk at 2476-80 feet showed some oil and gas along with drilling mud. Only a few

inches of the chalk core was recovered but it is reported to have shown a black oil saturation. This test is 1000 feet southwest of Hanselee and associates' well on the same lease, which made 13.2 gravity oil last summer along with a considerable quantity of salt water, and has recently been shut in.

Love and Lancaster's Elton Plantation 1, Section 17-4n-1e, a wildcat in Hinds County, several miles south the Jackson gas field, is coring in Midway chalk after logging this formation at 4062 feet; elevation is 260 feet. This is a 5000-foot test of the possibilities of production on the south flank of the Jackson field.

Withdrawals From Jackson Field Only a Trace

Jackson, Mississippi.—Gas withdrawal from the Jackson gas field during the month of October totaled 717,779,000 cubic feet which represents 5.67 per cent of the allowable withdrawal, according to the Mississippi State Oil and Gas Commission.

Jackson, Mississippi.—Walter A. Kent is assembling a block of wildcat leases in Calhoun County, in northeast Mississippi. The block is in township 14 south, 1 east.

Southeastern States Field Developments

MISSISSIPPI

Completion

Company, Well and Location	Production Bbls.	Production Depth
RANKIN COUNTY (JACKSON)—		
Love Pet. Co., E. L. Spann 1, 13-5-1e	¶35	2340

New Operations

HINDS COUNTY—United Gas Pub. Serv. Co., Fondren 1, 330 e and 660 s center sec 24-6n-1e.

RANKIN COUNTY—J. A. Baker et al, Rankinside Dev. Co. 2, 546 s and 136 w nec sw nw 6-5n-2e.

WILKINSON COUNTY—Foster Creek Oil Corp., Foster Creek Lbr. Co. 1, 156 e and 245 s nwc 12-2n-2w.

Wildcat Drilling Report

(Wells shut down not included)

HINDS COUNTY—Love & Lancaster, Elton Plantation 1, 17-4n-1e, elev 260 ft top chalk 4062 ft core chalk 4082 ft.

JASPER COUNTY—L. Spraragen et al, Bank of Philadelphia 1, se se 35-3n-12e, elev 680 ft dr rock 1700 ft.

LAMAR COUNTY—Stauffer & Kouri, Trs., Bond 1, sw ne 18-2n-14w, elev 364 ft lub to recov hung ds td 3026 ft. Dr. Chas. Gorr et al, Jordan 1, nw sw 1-2n-15w, dk.

MONROE COUNTY—P. J. McAlpine et al, Chas. Rye 1, se nw 22-15s-16w, dr 1820 ft.

ALABAMA

LAMAR COUNTY (VERNON)—P. J. McAlpine et al, Gardner 1, nw nw 22-15s-17w, arr deepen, td 3350 ft.

MARENGO COUNTY—Jos. Bruner et al, Nolan's Store 1, 23-14n-1e, lcn. Fee 1, 36-14n-2e, lcn.

MOBILE COUNTY—J. C. Prine et al, M. & O. Ry. 1, se ne sw 33-2n-4w, no report.

MICHIGAN FIELDS

Shell Starts Michigan Work With Three Tests

Mt. Pleasant, Mich.—Shell Petroleum Corporation this week made three locations for oil tests in the Dundee limestone in wildcat territory of Central Michigan, the first direct move of the company since the discovery of commercial quantities of oil in Michigan to enter into the production field in the state.

In each case the tests will be made on the southeastern trend of a geological structure believed to extend for several miles diagonally through this part of Michigan. One location has been made in Isabella County, Broomfield township, Section 13, 2½ miles southeast of a proven natural gas field. Another location has been made in Gratiot County, Seville township, Section 15, about 15 miles southeast of the Broomfield township test, and the third test is also in Gratiot County, North Star township, Section 9, some 13 miles farther southeast.

Previous exploration has indicated a structural arch extending on a southeastern trend across this part of the state where the drilling program has been started, parallel to a known producing Dundee arch about 13 miles north.

Contracts for the drilling have been let and operations were to be started this week on all three of the test wells.

Previous to this time Shell Petroleum Corporation has not carried on a drilling program in Michigan, although the company has held extensive acreage under lease since oil was discovered in commercial quantities.

Michigan Field Developments

Completions

Company, Well and Location	Initial Production Bbls.	Depth
MIDLAND COUNTY—		
W. L. McClanahan, Inc., Struble 7, Greendale Twp., Sec. 10, ne ne sw	200	3565
W. L. McClanahan, Inc., Wilhelm 1, Greendale Twp., Sec. 12, se se sw	180	3556
Pure Oil Co., Harris & Co. 3	*	800

New Operations

ISABELLA COUNTY — Shell Petroleum Co., Fritz 1, Broomfield Twp., Sec. 13, sw sw.

GRATIOT COUNTY—Shell Petroleum Co., Covell 1, Seville Twp., Sec. 15, se nw. Shell Petroleum Co., Mellinger 1, North Star Twp., Sec. 9, nw sw.

MIDLAND COUNTY—Wellman Oil Co., Bolen 3, Greendale Twp., Sec. 14, sw se ne. Pure Oil Co., Rhemenschnider 1, Greendale Twp., Sec. 15, ne nw sw.

Wildcat Drilling Report

(Wells shut down not included)

MIDLAND COUNTY—Pure Oil Co., Yost et al 1, Greendale Twp., Sec. 35, dr 1900 ft. Michigan Gas & Oil Co., Rayner 1, Lee Twp., Sec. 6, dr 3540 ft.

CLARE COUNTY — Theodore Oil Co., Thompson Bros., 1, Greenwood Twp., Sec. 35, dr 3600 ft.

GRATIOT COUNTY—J. G. Tiplady, Laycock 1, Arcada Twp., Sec. 11, dr 1100 ft.

MUSKEGON COUNTY — H. C. Nelson, Waller 1, White River Twp., Sec. 14, dr 1850

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ft. H. and W. Feicke 2, Fruitland Twp., Sec. 1, skid rig.

SAGINAW COUNTY—Webber, Kirchner 1, Tittatabwse Twp., Sec. 15, swab 4300 ft.

NEWAGO COUNTY—Hesperia Petroleum Co., Jones 1, 14n-14w, Sec. 20, dr 2600 ft. Newago Oil & Gas Co., Bates 1, 13n-13w, Sec. 12, bailing 5900 ft. Newago Prospecting Co., Ichenberg 1, Sec. 12, 16n-12w, dr 2000 ft. C. W. Teater, Hatch 1, Brooks Twp., Sec. 8, se ne ne, spud.

MACOMB COUNTY—H. H. Brown, Bower 1, Chesterfield Twp., Sec. 29, dr 350 ft.

LIVINGSTON COUNTY—H. Snell et al, Zebb 1, Genoa Twp., Sec. 34, dr 2300 ft.

OCEANA COUNTY—A. S. Cochran, Hannum 1, Elbridge Twp., Sec. 31, sw ne, dr 2100 ft.

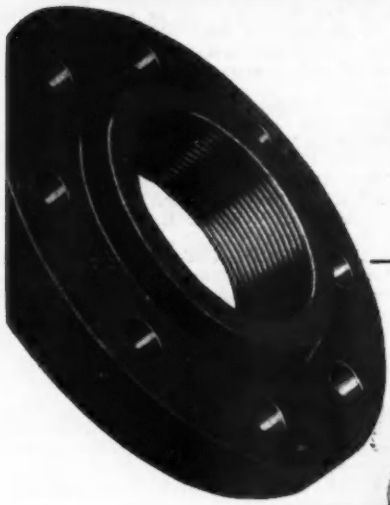
CASS COUNTY — Robert S. Anderson, Conkright 1, North Porter Twp., Sec. 29, Frac. sw¼, spud.

Two Completions in East Pool of Central Michigan

Mt. Pleasant, Mich.—Two commercial wells were completed in Michigan during the week, both located in the east pool of the Central Michigan field. W. L. McClanahan, Inc., Struble 7, Midland County, Greendale township, Section 10, was completed for 200 barrels a day and the same company's Wilhelm 1, Section 12 (same township) was good for 180 barrels on initial.

In Oceana County, the A. S. Cochran, Hannum 1, Elbridge township, SW NE Section 31, which was drilled into salt brine at 2100 feet in the upper Traverse is to be drilled deeper into the Lower Traverse and possibly the Dundee.

C. W. White of Chicago has leased 6000 acres in Alcona County, and has announced a drilling campaign in that district to be started this winter.



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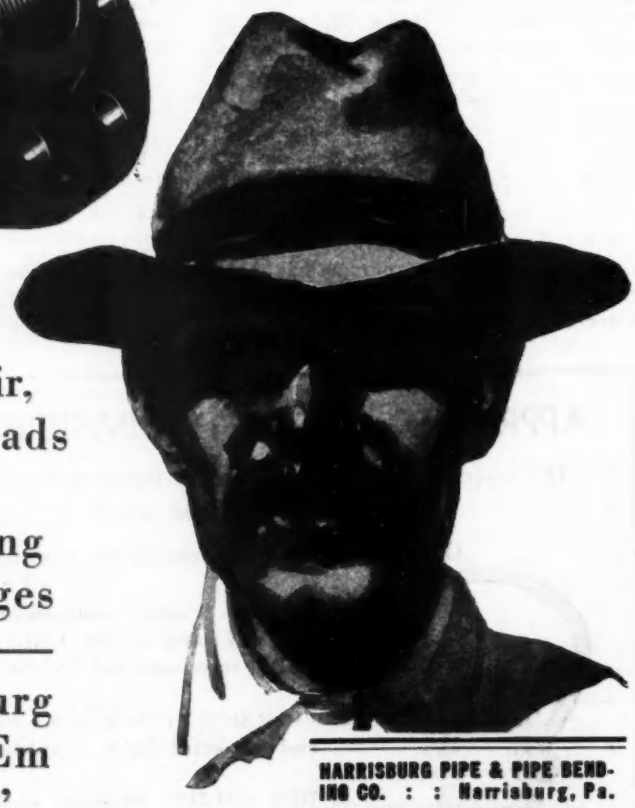

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EASTERN STATES

Eastern States Field Developments

Completions

PENNSYLVANIA

Company, Well and Location	Initial Production Bbls.	Depth
ALLEGHENY COUNTY—		
W. I. Gettman & Co., Hess 1	¶1	....
WASHINGTON COUNTY—		
E. H. Tague & Co., McKennan 1	¶3	....
McKennon 1	3	900
WEST VIRGINIA		
CABELL COUNTY—		
Merritts Creek Gas Co., Rickett 1	¶3½	3004
RITCHIE COUNTY—		
Southern Oil Co., Pribble 1	*	....
WAYNE COUNTY—		
Wayne United Gas Co., Newcomb 51	¶¼	3012
WIRT COUNTY—		
Brian & Baker, Higgins 1	*	....
Paul Roberts, Hall & Ackley 1	10	....
SOUTHEASTERN OHIO		
WASHINGTON COUNTY—		
F. H. Knox & Co., Reed 1	*	258
Robinson Bros., Van Fossen 1	1	352
J. M. Campbell, Martin 5	¶¼	1686
CENTRAL OHIO		
ASHLAND COUNTY—		
Faulkner & Phelps, Humm 6	2	727
LORAIN COUNTY—		
Ohio Fuel Gas Co., Armbruster 1	¶½	....
LICKING COUNTY—		
C. C. Moore, Wilson 2	¶1	783
MEIGS COUNTY—		
Frank Leifhoit & Co., Harper 1	¶½	1013
George Orndorff, Davidson 2	¶1¼	875
MEDINA COUNTY—		
Barnhart & Co., Funk 12	10	456
Colb & Co., Severcool 2	2	284
Ohio Fuel Gas Co., Norton 1	¶¼	....
MUSKINGUM COUNTY—		
Fritz Oil & Gas Co., Middleton 3	*	1025
NORTHWESTERN OHIO		
HANCOCK COUNTY—		
Porter-Davis Oil Co., Powell 24	35	1349
B. B. Porter, Porter 4	60	1359
SANDUSKY COUNTY—		
O'Brien & Co., Rice 1	*	1568
KENTUCKY		
DAVIESS COUNTY—		
Newton Ross & Co., Trummel 1	*	....
Johnson Oil & Refining Co., Jenkins Estate 3	25	937
Hupp, Duff & Co., Sparks 4	*	720
HANCOCK COUNTY—		
Bolling & White, Matthews 2	20	....
Hupp, Duff & Co., Jackson 6	5	....
McLEAN COUNTY—		
McLean Development Co., McManama 3	*	....
Ohio Oil Co., McManama No. 2, tr 5	105	....
OHIO COUNTY—		
Clark, Snyder & Co., Wilson 1	*	....
H. A. Henry, Chambers 5	10	....
Cumberland Petroleum Co., Brooks 11	100	....
Mecca Oil Co., Miller 2	5	....

New Equipment for the Field

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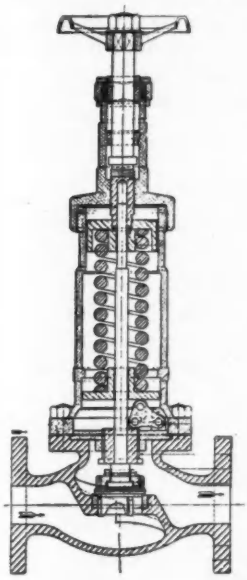
1. Pressure Relief and Back Pressure Valves

SCHUTTE & KOERTING COMPANY

Schutte & Koerting Company, Philadelphia, Pennsylvania, announce pressure relief and back pressure valves with constructional features including compensating mechanism interposed sliding plug and spring plate. This mechanism consists of three links mounted on a link bracket around the vertical spindle. The ends bearing on the plug and plate are fitted with rollers, the centers of which are so located that during the vertical movement as the valve opens or closes the horizontal distance between the fixed center and the center of the lower roller remains almost constant, while the corresponding horizontal distance between the fixed center and the center of the upper roller changes.



The variation in leverage thus occasioned compensates for the increased tension of the spring as the valve lifts, and the resultant spring pressure is equalized throughout the stroke of the valve disc, insuring close regulation of pressure. The screw spindle permits adjustment of the pressure from 15 pounds to 600.

A similar back pressure valve, with an outside spring for steam lines, is also announced.

2. Geared Pumping Power

NATIONAL SUPPLY COMPANY

The National Supply Companies announce a new geared power known as Type G-100, designed for the economical pumping of deep wells that ordinarily would require standard rigs and individual engines. It is especially suitable for those operating conditions demanding a more compact installation than National's 15-C Band Wheel Power.

For moderately high pumping speeds, the G-100 geared power is rated at 100 H.P. The lower crank has a 36-inch stroke with 12 well connections; upper crank stroke is 30 inches, with positions for eight well connections.

The double reduction gearing is entirely enclosed in a rigid housing, oil-tight and dirt-proof. The gearing has been designed with large diameter, wide-faced pinions, securing low bearing pressures. Gears are alloy steel, generally by Gleason and by National.

Every bearing in the G-100 power is a Timken, selected, in cooperation with Timken's engineers, to give a high factor of safety. An especially notable feature is the wide bearing spacing to handle the overhanging loads on the pinion shaft and the crankshaft. Extremely rigid mountings have been provided to maintain correct alignment.

Lubrication is by a gear driven pump enclosed in the housing. The lubricant is Purolator filtered. Clean oil is supplied under pressure to every part of the enclosed transmission.

National Geared Power

The G-100 geared power provides an installation of low initial cost.

3. Survey Instrument

ALEXANDER ANDERSON

Alexander Anderson, Fullerton, California, announces a new self-checking directional oil well survey apparatus which gives both the amount and the direction of hole deviation at any time during drilling.

This new instrument is designed to be operated on the sand line by oil company employees without any outside technical help.

The apparatus is housed in a bronze outer casing that is 1⅞ inches O. D. It is run either on a 20-foot sinker bar or directly beneath the bailer. When used with a sinker bar it may be run in open hole or lowered inside the drill pipe; but in the latter case the bit must have a hole through it big enough to permit the apparatus to project through and below the bit while the reading is being taken.

The instrument has two identical inclination recording

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Please see that I am supplied, without obligation, additional information on New Equipment Items Nos. ———— described in the November 21, 1932, issue of THE OIL WEEKLY.

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units which make independent records of the inclination and thus provide a check of the accuracy of the angle given. Below these units are four independent magnetic compasses, each having a jeweled, free-swinging magnetic needle that is constructed to always swing in a horizontal plane at all positions of the instrument.

The operation of the units is controlled by a clock set to close the circuit of two dry cells after the lapse of enough time to permit the apparatuus to be lowered on the sand line. The clock is provided with a gravity operated element which keeps it from running when upside down and permits the instrument to be loaded and hung up in the derrick in an inverted position until ready for use. When the apparatus is turned right side up and started into the hole the clock automatically starts running.

The closing of the circuit by the clock ignites a fuse. This fuse burns down rapidly and first releases in succession the two inclination recorders and then the compass clamp. This last device instantaneously clamps off four compass needles at the same moment and completes the recording operation. It takes but one and one-half minutes for the fuse to burn.

As soon as the apparatus is removed from the well the instrument frame is taken out of the bronze casing for inspection. With both inclination readings identical it is evident that the recorded inclination is correct and that neither plumb bob was swinging when the record was made. In the same way, the four compasses pointing in exactly the same direction assure an accurate directional record.

Inclination is read directly from the degree circles printed on the inclination discs. Inclinations up to 26 degrees from the vertical are recorded by the instrument with an accuracy guaranteed to within one-quarter degree up to 14 degrees; and to within one-half degree above 14.

STANDARD EQUIPMENT . . . .

"FREE-WHEELING" GAGE COCK

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LEADING BOILER MAKERS . . . . have standardized on the Fischer "FREE - WHEELING" Gage Cock—Why? Because their customers deserve the best.

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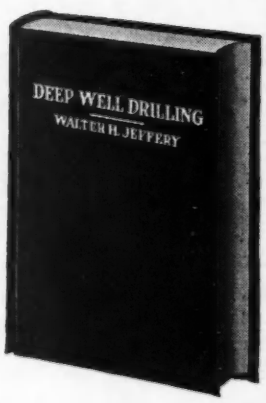
DEEP WELL DRILLING

by **WALTER H. JEFFERY**



Re-written and revised to date, and enlarged by the addition of the following New Chapters:

GEOPHYSICAL PROSPECTING AND AIR MAPPING.

STRAIGHT HOLE DRILLING AND THE TREATMENT OF CROOKED HOLES.

WATER SUPPLY.

THE GAS-AIR LIFT METHOD OF PRODUCING OIL.

A. P. I. CODES.

Preparatory to writing the new book, the author spent weeks in a first hand study of modern methods of drilling by the rotary system, and of completing wells, controlling high pressures and operating wells in the deep fields of California and Oklahoma.

The third edition contains 816 pages, 150 pages more than the second edition, and 452 illustrations, but the price is the same, $6.00.

Send Check to

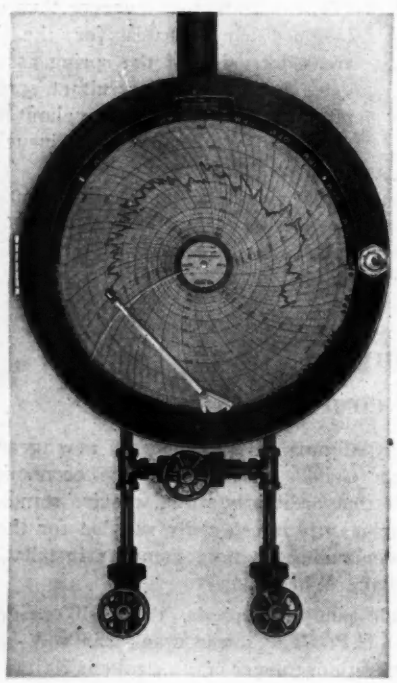
GULF PUBLISHING COMPANY

3301 BUFFALO DRIVE HOUSTON, TEXAS

4. Flow Meter

BROWN INSTRUMENT COMPANY

Brown Instrument Company, Philadelphia, Pennsylvania, announces a new mechanical flow meter line in a number of combinations including: square root and evenly divided charts, automatic planimeter, multipen, flow, pressure, temperature, compensation for pressure and temperature, and automatic control and recording.



Brown Flow Meter

This new line of mechanical flow meters is featured by a simple-direct, lever-actuating mechanism, a large, powerful float, a pressure tight bearing with a grease reservoir, a series of range tubes that permit changing the range of the meter without disturbing the orifice, and by a type of construction and assembly whereby the manometer may be taken apart and cleaned in the field without altering the calibration.

The instrument mechanism is built into a die cast aluminum case which is attached to the manometer assembly by means of a three armed bracket that also supports the high and low pressure chambers of the manometer. The two chambers are connected by means of a U-tube below them. The construction is such that it is possible to drain the mercury from the manometer, reassemble same, add enough mercury to bring the pen to zero, and the calibration will remain the same.

Squeaks *from the* BULL WHEEL

The pet argument in the Blank family was going on again. The wife had neglected to sew a button on one of the most dependent portions of the husband's garments, and he was raising particular cain about it.

"Well, I wasn't feeling well enough to do any sewing. Which is more important —your wife or your pants?" she argued.

"There's many a place I can go without a wife," was the grumbled reply.

"I went out with a mind-reader last night."

"How'd she enjoy her rest?"

"Hello, Sam! Glad to see you. What are you doing now? Still pumping the church organ?"

"Yes, sir, I'm still pumping the organ. And I'm getting to be a pretty fine pumper, too. The other day they had a big organist over from Detroit and I pumped a piece he couldn't play."

Teacher: "What is a censor?"

Oswald: "A censor is a man who goes around from house to house to increase the population."

"What are they moving the church for?"

"Well, stranger, I'm the mayor of these diggin's and I am for law enforcement. We've got an ordinance what says no dance hall shall be nearer than 300 feet from a church. I give 'em three days to move the church."

"I'm raising money for the unemployed. Would you like to get in on it?"

"Yes, indeed; how much can you let me have?"

Teacher: "Who can tell me what the former ruler of Russia was called?"

Class (in unison): "Czar."

Teacher: "Correct, and what was the wife called?"

Class: "Czarina."

Teacher: "Correct, and now what are the Czar's little children called?"

A pause, and then a small, timid voice piped up: "Czardines."

"What does an old maid say at the end of her nightly prayers?"

"Ah, men!"

"And has she made him a good wife?"

"I don't know. But I do know she has made him a very good husband."

An old Quaker going down a street one night was assaulted by a thug who struck him on the cheek. The Quaker quietly turned to the thug and said:

"Would thee mind slapping the other cheek too?"

The thug promptly did so, saying, "Well, you are an easy mark."

"Now God be praised!" said the Quaker, proceeding to throw off his coat and roll up his sleeves, "I have obeyed His teachings—and now I am going to lick H—— out of thee!"

Stage Hand (to manager, sotto voce): "Shall I lower the curtain?"

Manager: "Why?"

Stage Hand: "One of the livin' statues has the hiccups."

Temperance Lecturer — "Yes, my friends, drink is a curse. If all the public houses were at the bottom of the sea, what would be the result?"

Voice from the Crowd—"A lot of people would be drowned."

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When Protection Really Costs Nothing . . .

BAKER Drill Pipe Floats save their cost in longer life of wire lines, brake bands and other rig equipment . . . .

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Magnetometer Article Reprint Available

American Askania Corporation, Houston, Texas, announces availability of reprints of an A.I.M.M.E. paper by Messrs. Heiland and Pugh of Denver, Colorado, on "Theory and Experiments Concerning a New Compensated Magnetometer System."

The article outlines first the principle and history of temperature compensation of magnetic instruments and then leads to the main chapters namely: the theory of temperature compensation in the new magnet system and the practical tests in the laboratory in order to confirm the data theoretically obtained. The magnetic and mechanical effects of temperature on scale value and scale reading have been theoretically investigated in addition to other effects, particularly those dealing with the changes in magnetic latitude adjustment which plays such an important part in the older types of magnet systems.

Experiments in the laboratory have mainly been concentrated on tests checking the temperature compensation of the system and its variations when latitude setting and scale value are changed. A close correlation between theoretical considerations and practical data has been obtained, and the many charts showing the temperature coefficient as a function of latitude for various scale values and as a function of scale value for various latitudes, records of temperature coefficients make this part of the publication particularly interesting and instructive.

In concluding their interesting paper, the authors point out that the main advantage of this new maget system lies in the fact that it will give reliable results for a great variety of latitude, scale value and temperature conditions.

CATALOGS

Hydrostatic Sand Pump

Martin-Decker Development Company, 3431 Cherry Avenue, Long Beach, California, announces availability of a bulletin describing a hydrostatic sand pump for removing sand, mud and junk from oil wells, designed, according to the manufacturers, so that high velocity fluid flow clears perforations or screen and cleans the formation by putting to work the hydrostatic pressure dormant in the ordinary well.

Welding Rod

The Linde Air Products Company, 245 East 42 Street, New York, announces availability of No. 25, a booklet in which are described the physical and welding characteristics of a new bronze welding rod, with which it is possible to obtain tensile strengths in joining steel of between 56,000 and 60,000 pounds per square inch and ductility in excess of 30 per cent.

Rotary Chain

Link-Belt Company, 200 South Belmont Avenue, Indianapolis, Indiana, announces availability of a bulletin describing the new Red-Hed rotary chain, a lighter companion to the stronger Hyper chain made by the same company.

Rubber Belt

The Dayton Rubber Manufacturing Company, Dayton, Ohio, is distributing a new condensed catalog No. 105 on Dayton Cog-Belt Drives which has been prepared in a more compact edition adaptable for office files or for sectional catalog binders. Complete prices and dimensions are included as well as simplified data for the calculation of special drives where required.

Welding Courses Planned At Cleveland This Winter

Success of the combined practical and theoretical one-week welding course offered by John Huntington Polytechnic Institute, Cleveland, in cooperation with the Lincoln Electric Company, has led to the decision to repeat the course several times during the winter season.

The course consists of a week's intensive work, six days being spent in the operator's training school of the Lincoln Electric Company. Each evening from Monday to Friday a lecture on designing for arc welded construction is given at John Huntington Institute.

Enrollment is limited to 30 men and applicants must be college graduates in engineering or have equivalent practical experience. The course is planned for designing engineers, machine designers, chief draftsmen, structural engineers and others in similar positions who are interested in improving their knowledge of design for welded construction. Instruction is given in the operation of the arc so that the designer will be thoroughly familiar with the problems of arc welding from a practical or operator's standpoint.

Further information concerning the course and the dates on which it will be offered may be secured from Alfred Mewett, Dean, John Huntington Polytechnic Institute, Cleveland, Ohio, or E. W. P. Smith, Consulting Engineer, Box 683, Cleveland, Ohio. This course should not be confused with the four weeks' operators' training course which is operated continuously by the Lincoln Electric Company.

San Angelo, Texas.—Gas flow from Harrison-Turner and others' wildcat on the Addis ranch in Ector County increased to six million cubic feet when drilled to 3810 feet. This wildcat is about 18 miles northeast of the Connell-Judkins field and several miles west of Odessa. It is conceded to offer a good chance of opening a new field in West Texas. Six-inch casing set at 3680 feet failed to cut off upper water and will be cemented when drilling is resumed.

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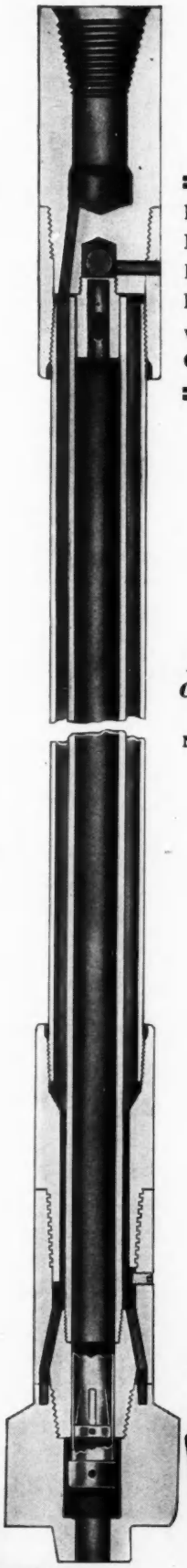
We thank our many friends and users for their continued use of Brewster made products and in return for their confidence we have done our best to keep these products ever in the lead by improving both design and material. We have installed a new Electric Furnace and an Analysis Laboratory to insure the quality of our material. We also surface our cutting tools with "CARBOLITE" (a metal as hard as the diamond) as well as improving the design and efficiency of our tools wherever possible.

The new Brewster Automatic Core Barrel is designed to aid you in your coring by providing a clean unbroken core. The inner Barrel is washed clean by water—which is directed around the inner Barrel and to the Bit as soon as the coring begins. The valve in the top of the Barrel prevents pressure from holding the ball down. This permits the soft sand core to enter the Barrel without resistance.

This Barrel, as are Type "C" and Type "M", is equipped with the Brewster Split Liner which permits the core being removed without breaking.

By use of Type "M" Bit Body ROLLER CUTTER HEADS can be used with Brewster Core Barrels.

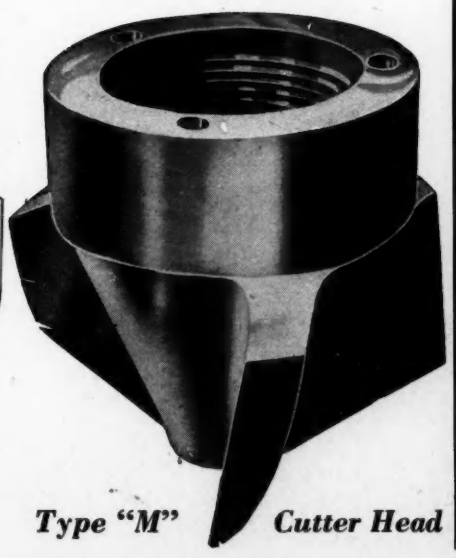


By use of the Type M Bit Body ROLLER CUTTER HEADS can be used with the Perfection Core Barrel.

Automatic Core Barrel

Patent No. 1,505,346

Barrel equipped with Roller Bit



Type "M" Cutter Head

★ *Warehouses:* The Iverson Specialty Co., Oklahoma City, Oklahoma, Phone 2-2833; The Brewster Houston Store, 2000 Harrington Street, Capitol 2031; Longview, Texas, 313 E. Cotton Street, Phone 781. *Export Distributors:* Acme Well Supply Company, Inc., 136 Liberty Street, New York City.

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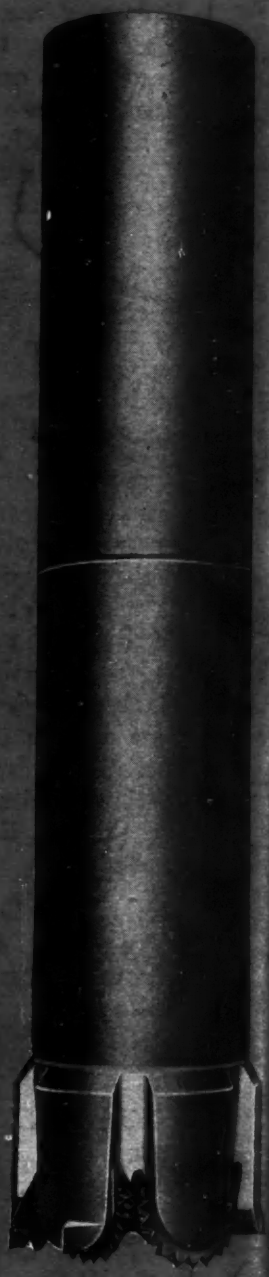

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